



Planning &
Environment

Greater Macarthur Land Release Investigation

LAND USE AND INFRASTRUCTURE ANALYSIS



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Department Planning and Environment

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Introduction

Sydney needs more than 33,200 new homes annually to meet projected population growth to 2036.

A Plan for Growing Sydney is the NSW Government's plan to identify how Sydney can create this required additional housing stock, as well as providing the necessary employment opportunities and infrastructure delivery, while protecting the significant and iconic natural environment and improving the liveability of the city.

As part of meeting this challenge, the NSW Government will:

- ▶ Maintain its continued investment in North West and South West Priority Growth Areas along with priority urban renewal precincts; and
- ▶ Prioritise increasing the rate of housing delivery in new urban release areas.

Within *A Plan for Growing Sydney*, Greater Macarthur has been identified as a potential area where urban development could occur to cater for the growing population of Sydney.

A preliminary assessment of the suitability and infrastructure capacity of Greater Macarthur has identified that its northern and southern precincts present opportunities to increase housing supply concurrently with the North West and South West Priority Growth Areas.

The Department of Planning and Environment (DP&E) has led investigations into the potential for urban development in Greater Macarthur. The investigations have identified land that is suitable for urban development, the infrastructure required to support growth, and how Greater Macarthur would be connected to jobs and other services in other parts of metropolitan Sydney.

There are immediate opportunities to deliver up to 34,700 homes in Menangle Park and Mount Gilead and in a new town at Wilton, that will increase our capacity to provide new homes for Sydney's growing population.

Maximising these opportunities requires a coordinated approach to land use planning and infrastructure delivery. We will implement the vision for Greater Macarthur by:

- ▶ Identifying Menangle Park, Mount Gilead and Wilton as Priority Growth Areas by including them in the State Environmental Planning Policy (Sydney Region Growth Centres) 2006 (the Growth Centres SEPP);
- ▶ Investigating declaring Menangle Park, Mount Gilead and Wilton as Special Infrastructure Contribution Areas to coordinate the funding and delivery of infrastructure that is necessary to support growth; and
- ▶ Continuing to work closely with Wollondilly Shire Council, Campbelltown City Council, and across NSW Government agencies to facilitate outcomes that deliver new communities with homes, jobs, infrastructure and services while protecting the environment and natural resources.

Protection of Rural Character

Areas outside Menangle Park, Mount Gilead and Wilton have significant infrastructure costs and environmental constraints, but provide opportunities for longer term supply.

Up to 2036 these areas will remain rural in nature, with small scale development that can be supported by the existing infrastructure and transport network. The rural setting of Appin Village will be protected, with only small scale expansion taking place, in line with existing post-Gateway planning proposals.

Beyond 2036 there are opportunities to provide another 33,100 homes and strategic employment opportunities, supported by the construction of the Outer Sydney Orbital, upgraded Hume Highway interchange and the Maldon-Dombarton freight rail line.

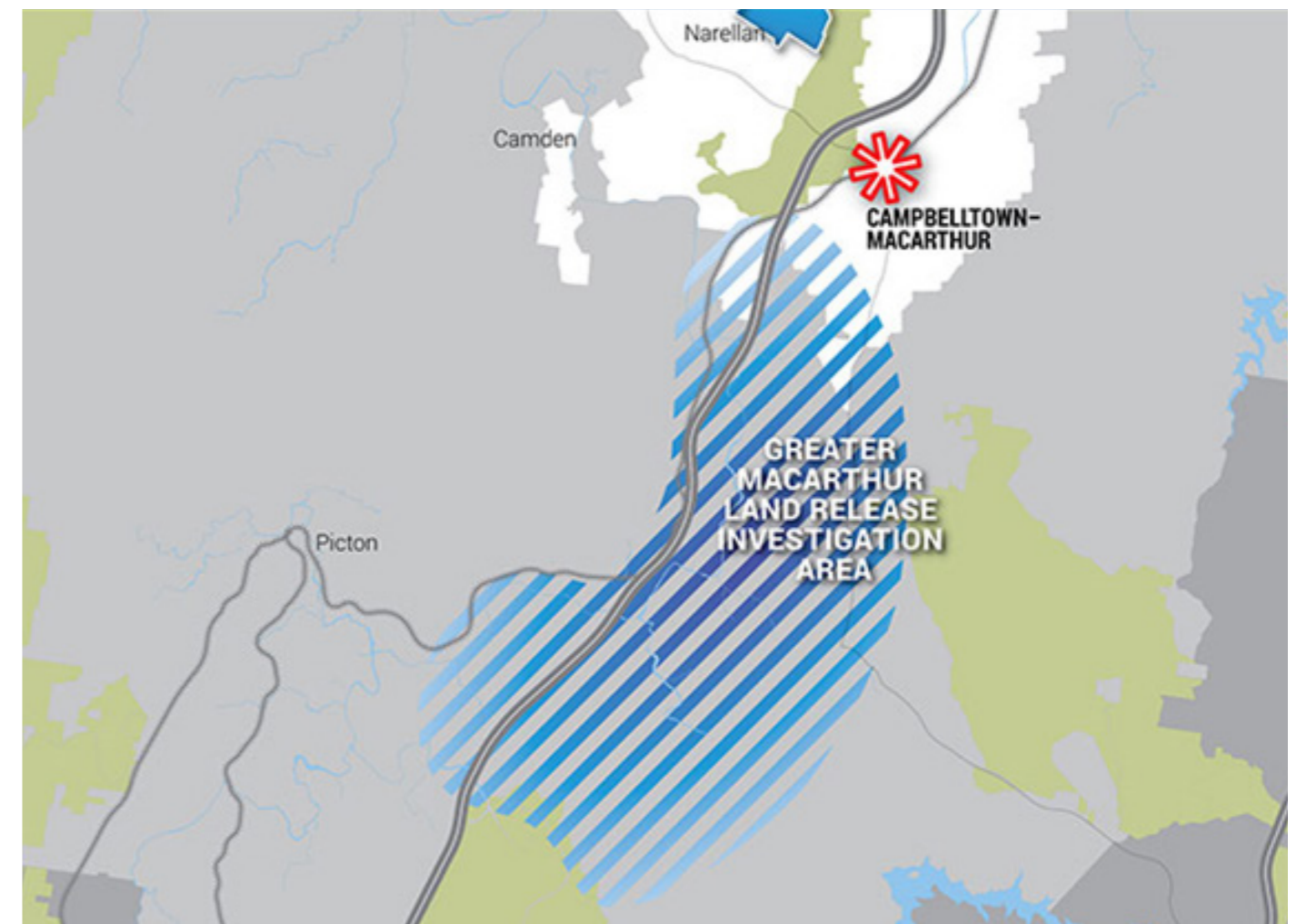


Figure 1 Greater Macarthur Land Release Investigation Area (*A Plan for Growing Sydney*).

A Plan for Growing Sydney – Action 2.4.2

Action 2.4.2 of *A Plan for Growing Sydney* aims to develop a long-term framework for the identification of new growth centres to improve the management of future land release, stimulate competition to keep downward pressure on prices and to help prevent speculative investment and land-banking.

Action 2.4.2 identifies the need for a long-term growth framework to consider:

- ▶ The sustainability of Sydney's agricultural and resource sectors;
- ▶ The cost of delivering roads, transport and services infrastructure;
- ▶ The costs to communities of higher transport and infrastructure costs, reduced social outcomes and poorer access to economic opportunities and services;
- ▶ The compatibility of development with adjacent land uses; and
- ▶ Access to employment, noting that currently 69 per cent of residents in Sydney's north-west and south-west travel outside their Local Government Area to work, adding considerably to their weekly expenses.

In preparing a framework for the identification of new Growth Centres, Action 2.4.2 indicates that the following issues should be considered:

- ▶ The value of land for drinking water supply, agriculture, environmental management, resources, tourism and other purposes;
- ▶ Constraints to development, including environmental constraints and natural hazards;
- ▶ Private sector interest in developing particular land;
- ▶ Proximity of land to current and planned locations of employment;
- ▶ The cost of infrastructure provision including roads, water, sewerage, public transport, schools and health facilities; and
- ▶ The economic and social cost to communities of having relatively poor access to employment and services.

The Greater Macarthur Land Release Investigation addresses the above objectives and considerations. In particular the Growth Planning Framework:

- ▶ Examines the suitability of the area for urban development;
- ▶ Indicates potential social, transport and utilities infrastructure required to service future urban development;
- ▶ Provides an indicative urban structure with potential land uses and centres;
- ▶ Indicates potential sequencing of urban development prioritising unencumbered land for development;
- ▶ Indicates a clear land use and infrastructure strategy required to guide the release of land; and
- ▶ Outlines the land release pathway required for land that is encumbered or constrained for urban development.

Purpose of Report

This report identifies the constraints and opportunities for urban development in the study area. The report analyses the background studies undertaken to inform if and where future development should occur and in what sequence. Specifically, the report:

- ▶ Outlines the investigation process;
- ▶ Details the existing context of the study area in terms of location, existing infrastructure, demographic profile, growth demand;
- ▶ Clarifies how the boundaries of the study area were shaped;
- ▶ Analyses the existing values and constraints within the study area; and
- ▶ Analyses the proposed precincts, sequencing for potential future urban development and required infrastructure to facilitate growth.

Partnership

The Great Macarthur Land Release Investigation has been undertaken in partnership with Transport for NSW, Campbelltown City Council and Wollondilly Shire Council through a Project Control Group (PCG).

Consultation

An Agency and Council workshop was undertaken on 27 April 2015.

The Department is committed to ongoing engagement with residents and stakeholders through an interactive Greater Macarthur webpage: planning.nsw.gov.au/greatermacarthur.

Consultancy Team

The following specialist consultant inputs have assisted in the preparation of this report:

INPUT	CONSULTANT
Strategic and Structure Planning	Urbis
Housing Demand	AEC
Traffic and Transport	AECOM (Transport for NSW)
Infrastructure Services	AECOM
Resource and Mining and Rural Values	AgEconPlus
Heritage	AHMS
Biodiversity	Eco Logical Australia
Water Management	GHD
Social Infrastructure	GHD
Employment and Economics	SGS Economics & Planning

Investigation Process

Phase 1 Urban Capability

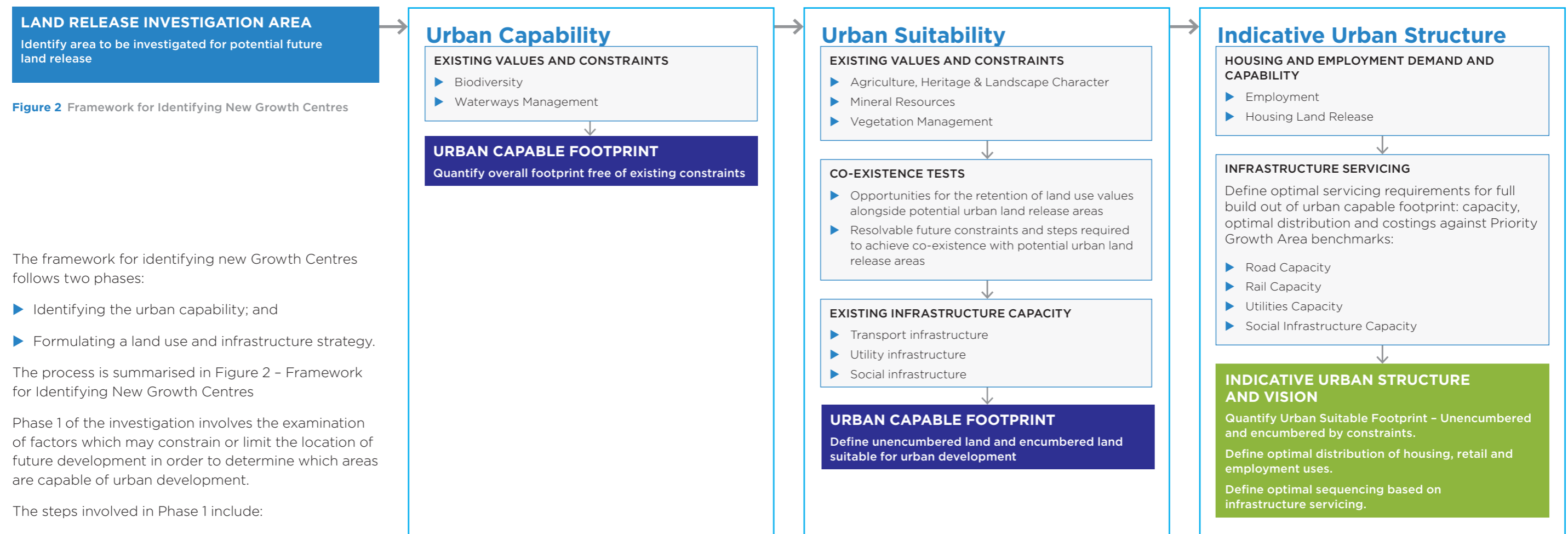


Figure 2 Framework for Identifying New Growth Centres

The framework for identifying new Growth Centres follows two phases:

- Identifying the urban capability; and
- Formulating a land use and infrastructure strategy.

The process is summarised in Figure 2 – Framework for Identifying New Growth Centres

Phase 1 of the investigation involves the examination of factors which may constrain or limit the location of future development in order to determine which areas are capable of urban development.

The steps involved in Phase 1 include:

1.1 Urban Capability

The investigation boundary identified in the Plan for Growing Sydney (18,000 hectares) progressed into the Urban Capable Boundary (16,000 hectares) that responds to natural and geographical boundaries. A desktop land use and key constraints analysis (biodiversity and waterways) indicated broad areas and yields to inform the technical studies.

1.2 Investigating the Land Release Area

Assessment of the proposed land release area in its existing context, including:

- Identifying existing land use values and immediate constraints;
- Defining the potential housing and employment distribution;
- Identifying existing infrastructure capacities, opportunities for early upgrades and potential pinch points;
- Undertaking a market/needs analysis for housing, retail and employment; and
- Opportunities for the retention of existing land use values alongside potential urban land release areas
- Defining the utilities, social and transport infrastructure requirements for a full build out of the urban capable footprint.

1.3 Identification of Urban Suitable Footprint

The investigations determine the suitability of land for potential release for urban development.

The suitability for development is divided in three categories:

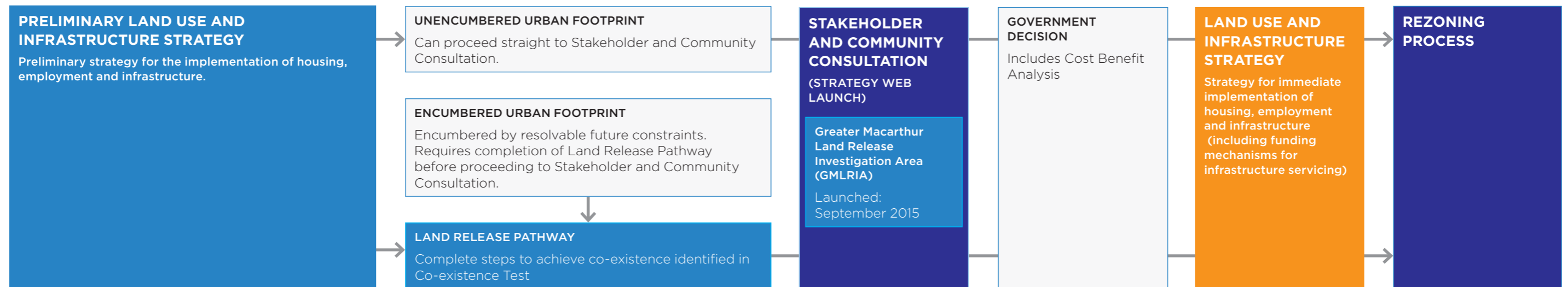
- Unencumbered land which is suitable for development;
- Land encumbered by constraints which are resolvable with appropriate environmental or staging measures; and
- Land constrained for development with issues that might be resolvable with appropriate environmental measures.

1.4 Indicative Urban Structure

An Indicative Urban Structure based on the findings of Phase 1, quantifies the urban suitable footprint, defines the optimal sequencing of housing and employment distribution and supported by optimal infrastructure servicing requirements. It outlines potential:

- Land uses;
- Centres and their hierarchy;
- Role and function of employment areas;
- Transport infrastructure; and
- Services infrastructure and their sequencing.

Phase 2 Land Use and Infrastructure Strategy



The Preliminary Land Use and Infrastructure Strategy identifies two urban suitable footprint scenarios:

Unencumbered Urban Land

- Steps and processes to proceed to a Land and Infrastructure Release Strategy to inform its rezoning.
- Land Release will only be supported where funding commitments to meet infrastructure servicing requirements are made either by private accelerated proposals or by the State Government.

Encumbered Urban Land

- A Land Release Pathway outlines the steps required to resolve constraints prior to proceeding to a Land Release and Infrastructure Strategy.
- Land Release will only be supported where funding commitments to meet infrastructure servicing requirements are made either by private accelerated proposals or by the State Government.

Stakeholder and Community Consultation

The community and other relevant stakeholders will be engaged once the preliminary investigations have taken place to discuss their implications and to understand the different perspectives the public has on future urban development in the area.

Government Decision

The NSW Government will make a decision on the Land Use and Infrastructure Strategy based on:

- Feedback from the stakeholder and community consultation; and
- A cost benefit analysis.

Land Use and Infrastructure Strategy

Land Use and Infrastructure Strategy for immediate implementation of housing, employment and infrastructure.

Infrastructure requirements will need to be delivered through an appropriate mechanism. The preferred approach is a Special Infrastructure Contribution at no cost to government, otherwise a series of planning agreements would need to be entered into between the Minister for Planning and the relevant proponents.

A Special Infrastructure Contribution will create a framework to share the costs and coordinate delivery of major new transport and community infrastructure.

Precinct Land Release

Additional stakeholder and community consultation opportunities would be required as part of any subsequent precinct rezoning process.

Area Context

The Greater Macarthur Investigation Area (GMLRIA) identified in *A Plan for Growing Sydney* comprises an area of approximately 17,600 hectares and is located approximately 70km south-west of the Sydney CBD. The area spreads across the Campbelltown and Wollondilly Local Government Areas and extends from Menangle Park in the north, Appin in the East, Wilton in the south and Maldon to the south west.

The terrain across the study area is relatively flat with steeper topography around river and creek lines, while the topography to the west of the site is considerably more variable associated with the Razorback Range. The study area is located within both the Nepean River and Georges River catchments and contains a number of tributaries to both rivers.

Land within both Campbelltown and Wollondilly LGAs is predominantly zoned as rural land, allowing rural residential, agricultural and mining/extractive industries uses. However, there are pockets of land within the village centres of Appin, Wilton, Bingarra Gorge, Douglas Park, Menangle and Menangle Park which are zoned for low to medium density residential, business purposes and public recreation.

There are also employment areas zoned for heavy industrial land uses in Maldon and minor light industrial and mixed use land uses in Wilton.

The southern portion of the study area and beyond is identified as a Metropolitan Special Area by the Sydney Catchment Authority (Water NSW). Access to this area is restricted to protect the water quality associated with the Nepean, Avon, Cordeaux and Cataract Dams as part of the Sydney Drinking Water catchment as well as the significant biodiversity located within.

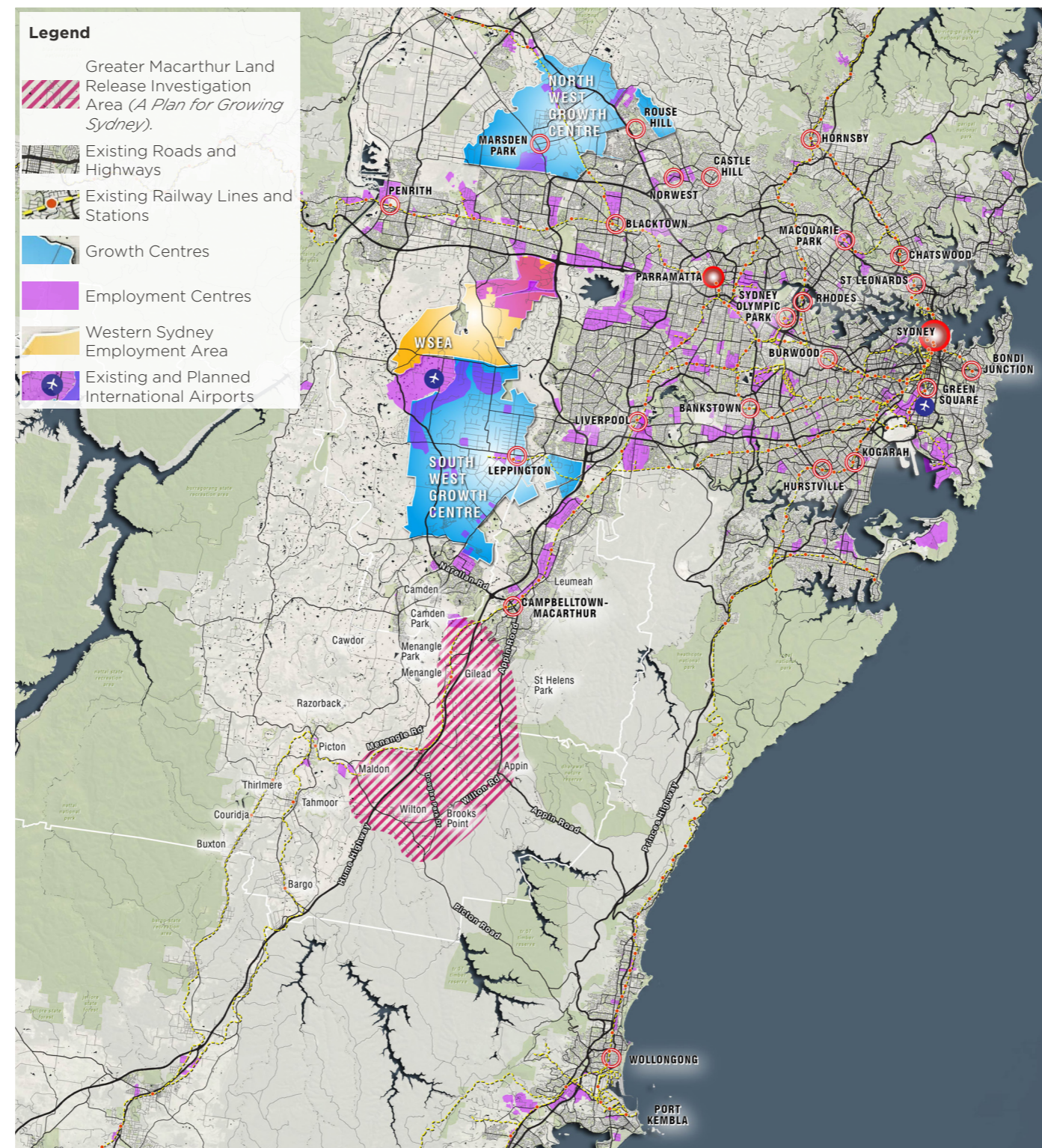


Figure 3 Metropolitan Context

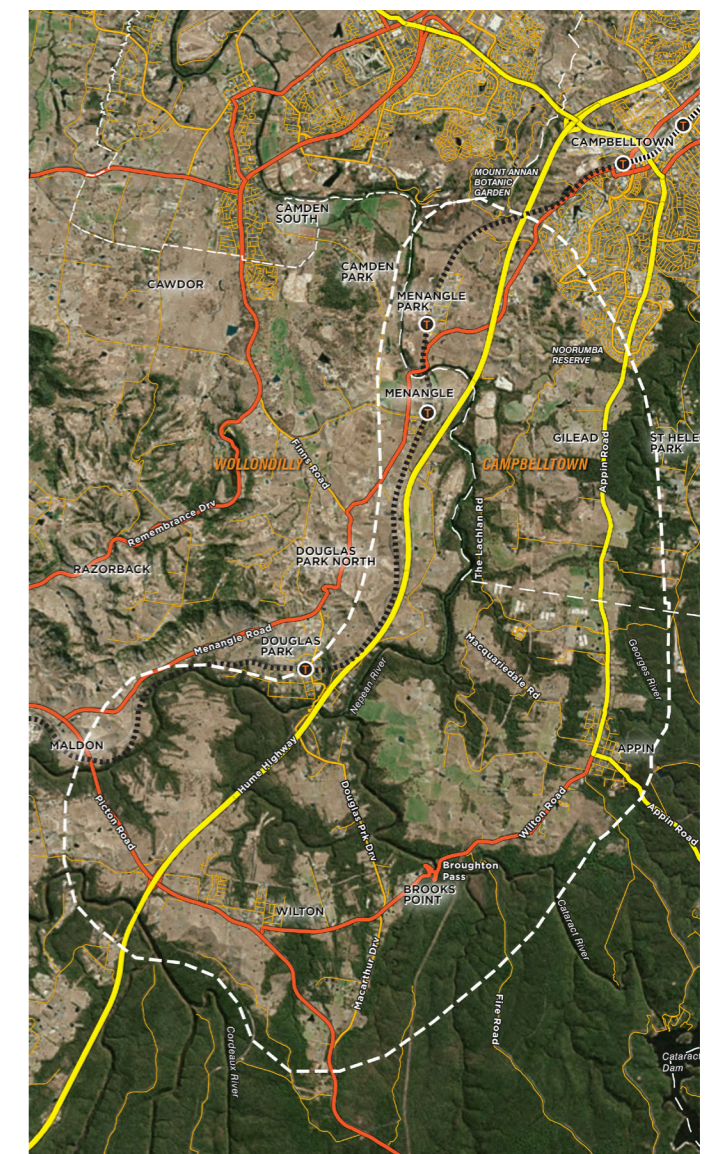


Figure 4 Road and Rail Access

Road Network and Travel Times

Road Access

The study area can be accessed by a number of existing arterial roads (Figure 4), including:

- ▶ The Hume Highway – which runs along the western portion of the area in a north-south direction and is the primary motorway connecting Sydney to Melbourne via Canberra. This links directly to the Sydney motorway network;
- ▶ Appin Road – which runs along the eastern portion of the site in a north-south direction and provides a connection from Campbelltown to Wollongong;
- ▶ Picton Road – which runs in a north west to south-east direction across the southern portion of the study area and provides a connection from Picton to Wollongong; and
- ▶ Wilton Road – traverses across the southern portion of the site and provides a connection from Appin to Wilton.

Distances and Travel Times

The distance and travel times from homes to employment areas are a key consideration for liveability of urban areas and housing demand. The approximate distance and indicative travel times from Wilton in the south of the GMLRIA to employment areas are summarised in Table 1 and Figure 5 - Travel Time from Wilton.

Public Transportation

Rail Services

The Southern Highlands Rail Line traverses along the western boundary of the study area to the west of the Hume Highway. The un-electrified rail line has stations at Menangle Park, Menangle and Douglas Park within the study area and has services from Campbelltown to Goulburn.

Bus Services

There are a number of bus services which operate in the GMLRIA, providing rural service connectivity to Campbelltown and Wollongong and between the centres of Appin, Wilton, Douglas Park, Menangle, Menangle Park and Picton.

Centre	Distance	Travel Time by Car
Centre	Distance	Travel Time by Car
Wollongong	35 km	30-45 minutes
Western Sydney Employment Area (WSEA)	45 km	30-45 minutes
Liverpool	45 km	30-45 minutes
Parramatta	65 km	60-75 minutes
Norwest Business Park	75 km	60-75 minutes
Sydney CBD	85 km	60 -90 minutes
Macquarie Park	85 km	60 -90 minutes

Table 1 Travel Time from Wilton

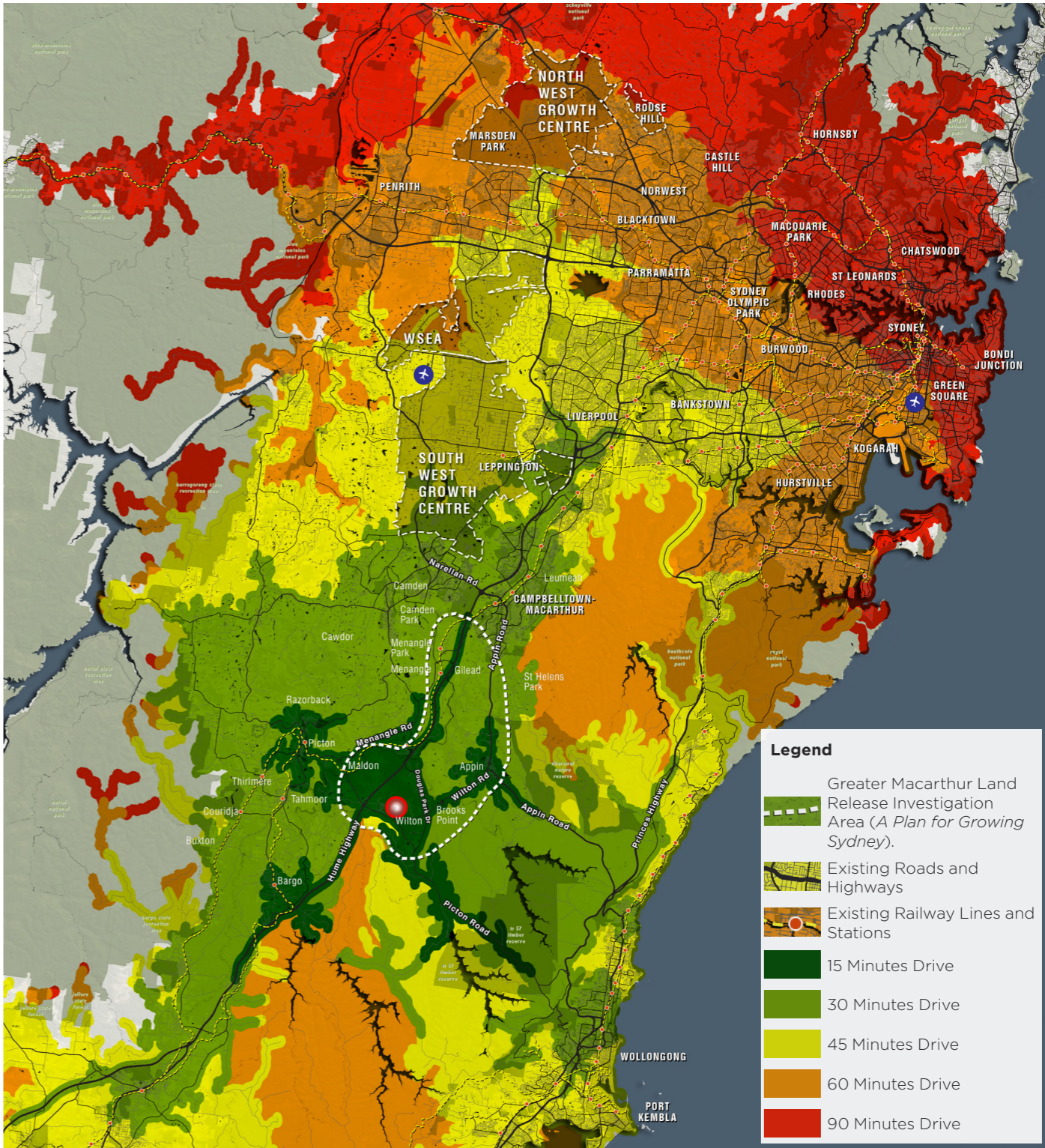


Figure 5 Travel Time from Wilton

Area Context

Planned and Potential Transport Infrastructure

South West Rail Link Extension

The South West Rail Link extension to St Marys via the Western Sydney Airport (northern extension) and to Narellan (southern extension) is identified in the strategy as a corridor to be prioritised for corridor protection. Additional studies will identify a link to the Southern Rail Line either at Macarthur, Menangle Park or Menangle.

The extension of the South West Rail Link would provide residents of the Macarthur / Campbelltown and Greater Macarthur area with enhanced connectivity to the Western Sydney Employment Area and the Western Sydney Airport.

Maldon- Dombarton Rail Line

The Australian Government has provided TfNSW with \$25.5M to undertake planning and pre-construction development for this freight line that will link Port Kembla with the Main South Freight Line. Approximately 70 per cent of the earthworks, track formation, drainage and bottom ballast have been constructed, including the approaches to the mid span of the Nepean River Bridge.

Spring Farm Link Road

The Spring Farm Parkway is a proposed east-west road link that would connect Camden Bypass in Spring Farm with the Hume Motorway, Menangle Road and Appin Road. The alignment traverses both the Camden and Campbelltown LGA's. The road will provide a relief to Narellan Road and Appin Road. The road will support development in the Menangle Park and Gilead areas. There is no funding available for this road. The corridor is already zoned and protected.

Georges River Parkway

Preserved north south road corridor located east of the Hume Highway. The Georges River Parkway would provide relief link between the Hume Highway and the M5 West. There is no funding available for this road. The corridor is already zoned and protected.

Outer Sydney Orbital

This is a multi-modal road, rail and freight corridor linking the Western Sydney Employment Area with the Central Coast and the Illawarra. Transport for NSW (TfNSW) is considering corridor alignments for their protection. The southern extent of the corridor study area overlaps with the Greater Macarthur investigation area. A short-list of alignment options is expected late 2015

High Speed Rail

A High Speed Rail (HSR) passenger network connecting Melbourne, Sydney, Canberra, Brisbane and other regional centres is under investigation by the Australian Government. The HSR Study Phase 2 Report (April 2013) identified a preferred alignment east of the Hume Highway. There is no current federal commitment to the project.

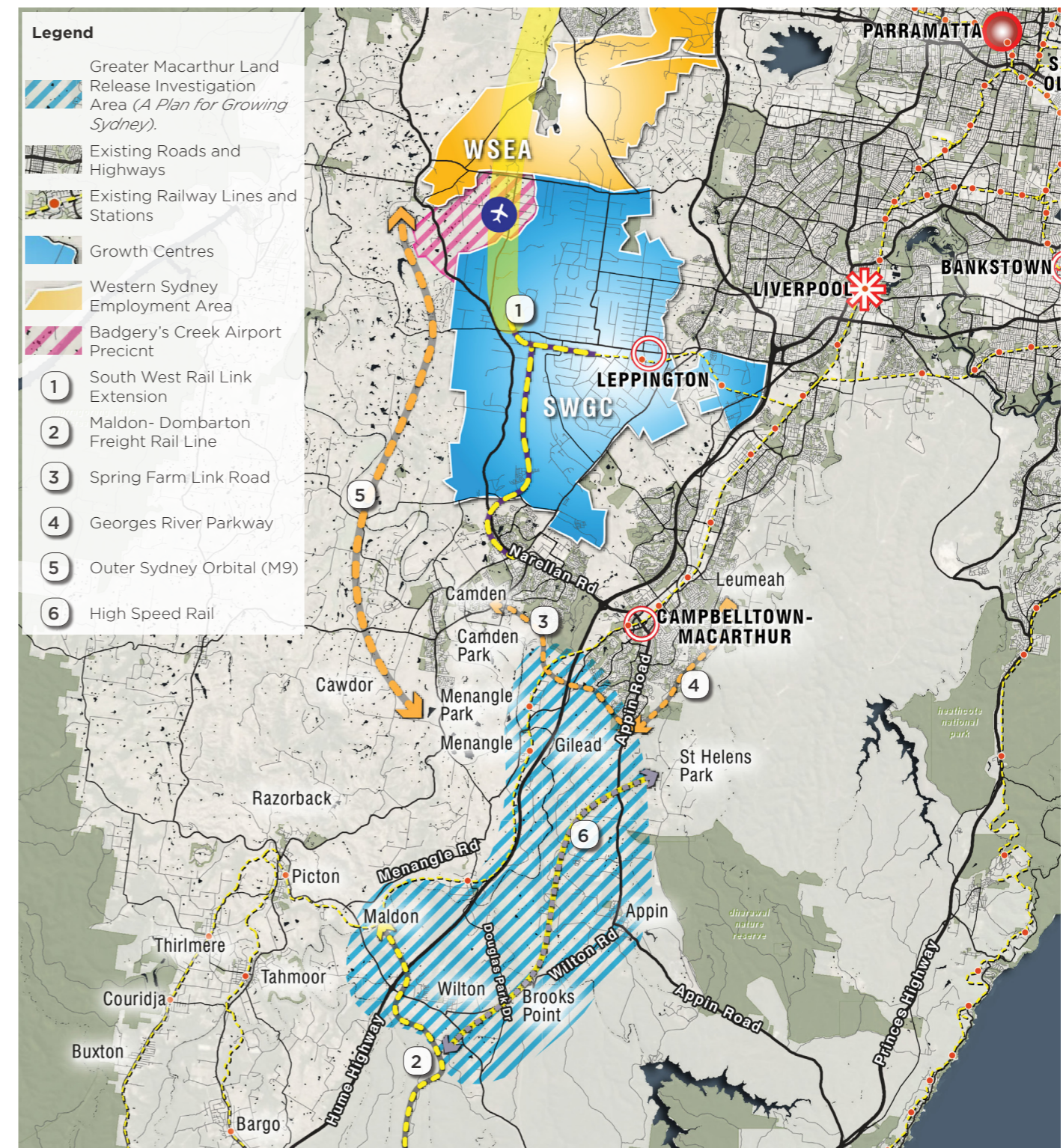


Figure 6 Planned and Potential Transport Infrastructure

Existing Land Uses

Land within the study area is predominantly zoned as rural land, allowing rural residential, agricultural and mining/extractive industries uses. However, there are pockets of land within the village centre of Appin, Wilton, Bingarra Gorge, Douglas Park, Menangle and Menangle Park which are zoned for low to medium density residential, business purposes and public recreation.

There are also employment areas zoned for heavy industrial land uses in Maldon and minor light industrial and mixed use land uses in Wilton.

Existing Population and Demographic Profile

Population and Households

The 2011 census indicated that GMLRIA has in the order of 1,811 dwellings comprising a population of 5,120 residents. Key findings of the socio-demographic analysis include:

- ▶ Relatively young demographic (dominant age cohorts of 15-29 and 0-14 years), which is consistent with the broader LGAs;
- ▶ Large proportions of residents have lived in the general vicinity, notably the LGAs of Campbelltown and Wollondilly;
- ▶ Households types are dominated by families (around 80%), which is consistent with the LGAs;
- ▶ The rate of household ownership and houses owned outright was fallen marginally from 27.6% in 2001 to just under 25.8% in 2011. In contrast, the proportion of homes owned with a mortgage has risen over the same period, around 45% in 2001 to 48% in 2011;
- ▶ Housing costs are more than 32%, indicating little unexhausted capacity for households to pay higher prices. The proportion of household income spent of housing costs is even higher in the Wollondilly LGA;
- ▶ The separate house is still the overwhelming type of dwelling in the NWGC and broader LGAs, however this type of house is declining as a proportion of new buildings; and
- ▶ Notwithstanding current dwelling structure, it is expected that over time there will be a shift towards more dense forms of housing particularly given the already high proportions of household income is spent on mortgage costs.

Socio-Economic Profile

Key findings of the socio-economic analysis include:

- ▶ The top three industries of resident employment in the GMLRIA are: agriculture, forestry and fishing (13.1%), mining (11.2%) and manufacturing (10.6%). with a lower representation in those typically serviced-based industries such as retail trade, accommodation and food services, financial and insurance services;
- ▶ Self-sufficiency rates across the Campbelltown and Wollondilly LGAs range between 41.7% and 57.1%, with an aggregate self-sufficiency rate at around 53.4%; and
- ▶ Despite self-sufficiency rates around 53%, the aggregate of the LGAs (of which the GMLRIA is a part of) have a lower self-containment rate with 38.4% of local residents working in either the Wollondilly or Campbelltown LGAs.

Growth Demand

There is very limited development in the pipeline within the GMLRIA, reflective of the fact majority of the area is not zoned for urban development.

More than 45,000 dwellings are proposed to be developed over the next 25 years in a series of planning proposals. West Appin and Wilton Junction dominate these planning proposals with the potential cumulative capacity to accommodate 30,000 dwellings.

The GMLRIA provides opportunities to meet any unmet demand from the North West and South West Priority Growth Areas. While market and development activity is modest by comparison to NWGC and SWGC, current development is met with keen market interest and acceptance. The prices at which developers are able to assemble sites underlies comparatively cheaper product pricing.

The profile of market activity in GMLRIA is distinct from those of the NWGC and SWGC where housing typologies are increasingly focused on smaller lot sizes. The profile of market demand in GMLRIA is reminiscent of the NWGC and SWGC as recent as 5-6 years ago with lots sized 600sqm-700sqm being the most popular among purchasers. With vacant blocks priced at \$300,000-\$400,000 purchasers are able to procure a fairly sizable home within a budget of \$550,000-\$700,000.

While medium sized lots (400sqm-450sqm) are still the dominant type of lot produced, small lots (280sqm-380sqm) are rapidly becoming the most popular and selling swiftly upon release. Developers are consequently incorporating higher proportions of small lot housing into overall residential mix.

The Housing Diversity package introduced in the Western Sydney Growth Centre in 2014 has not only allowed developers to respond to affordability pressures faced by households, it has also assisted to ease commercial feasibility challenges that have resulted from expensive and difficult site amalgamations.

Area Context

Known Proposals

There has been a keen interest from the private sector for urban development in the GMLRIA which has led to a number of growth proposals of varying scales. A summary of the recent planning proposals is provided in Table 2 and Figure 7 Known Proposals. In addition, there are a number of proposals for modest and/or minor development around existing villages such as Appin.

While these proposals would provide additional housing stock to the area, planning for the area with a holistic, rather than piecemeal, approach provides

efficiencies in the delivery of services, transport and social infrastructure.

A holistic approach provides an understanding of what is necessary to accommodate the future population of the wider area and provides the framework for significant pieces of infrastructure to be delivered, such as major roads. In turn, this offers a more desirable place for residents to live and provides employment opportunities and services which may not otherwise be realised.

Proposal	Area (Ha)	Proposed Residential Yield (Dwellings)	Proposed Employment land (Ha)	Status
Appin East	63	750	-	Preliminary inquiries
Brooks Point Road, Appin	24	228	-	Revised proposal being prepared
Bulli-Appin Road	-	20		Gateway approval
Glenlee (Camden-Campbelltown)	110		110	Gateway approval
Macquariedale Road, Appin	60	340	-	Gateway approval
Menangle Park Release Area	888	3,400	-	Gateway approval
Moreton Park Road, Menangle	600	390	240	Refused by JRPP
Mt Gilead	210	1,500	-	Post Exhibition
South Campbelltown	946	12,000	-	Referred to DP&E
Station Street, Menangle	38	350	-	Post Exhibition
West Appin Study Area (including three individual planning proposals)	3,437	18,000	373	Pre Gateway
Wilton Junction Study Area	2,774	12,000	181	Pre Gateway
Total	9,150	48,978	904	

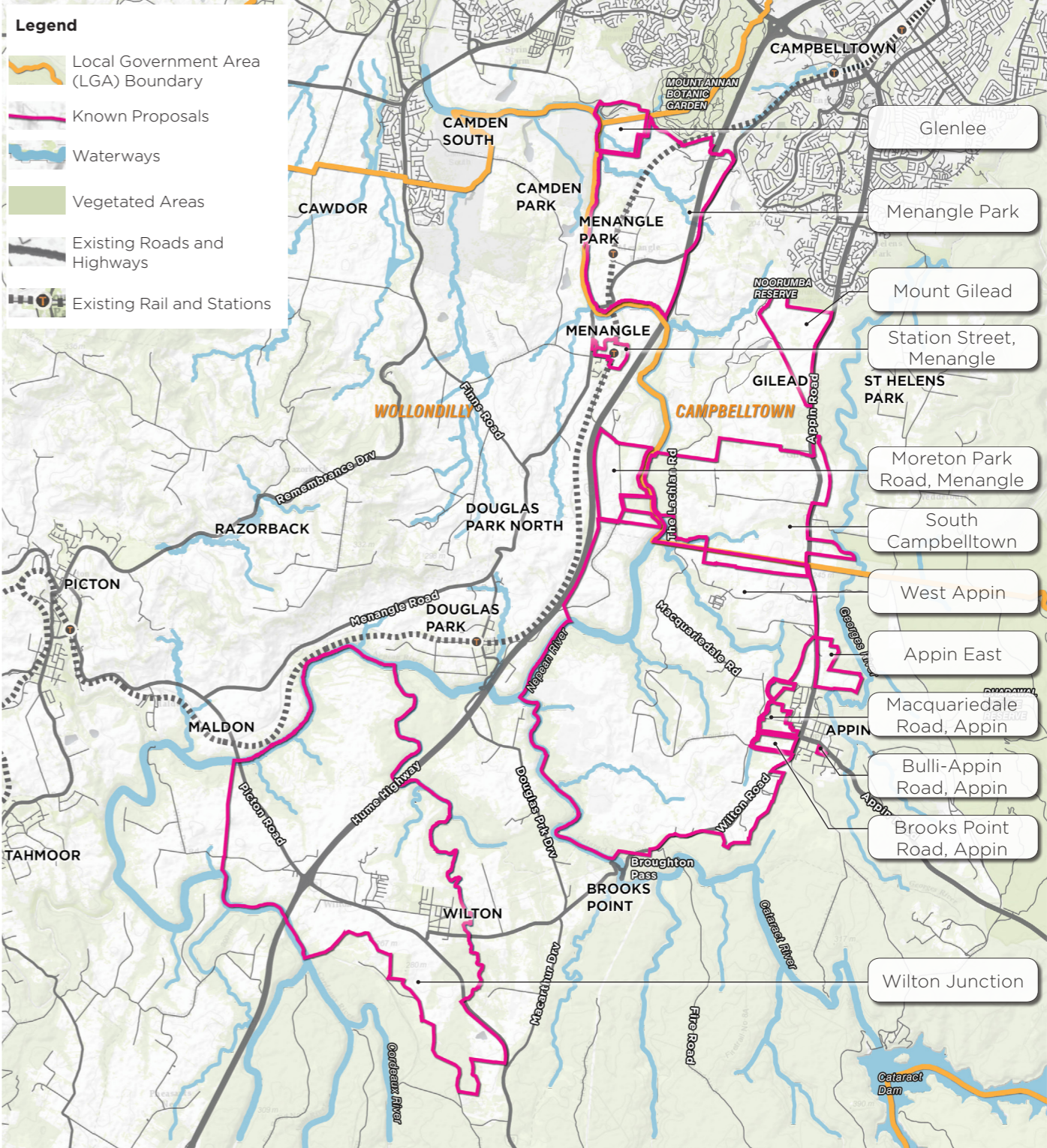


Table 2 & Figure 7 Known Proposals

Urban Capable Boundary

The investigation boundary identified in *A Plan for Growing Sydney* progressed into the Urban Capable Boundary that responded to natural, urban and governance boundaries.

Refer to Table 3 & Figure 8 for the elements that determined the Urban Capable Boundary:

Boundary element	Purpose
The Campbelltown / Camden LGA boundary north of Menangle Park and the Nepean River to the west of Menangle Park	Incorporate the Menangle Park Land Release area.
Menangle Road south of Menangle Park	<p>Incorporate the Southern Highlands Rail Line and the townships of Menangle, Douglas Park and Maldon as the rail line has the potential to be electrified in the future and support public transport needs.</p> <p>Land west of Menangle Road was excluded to avoid impacts on the agriculture setting and scenic qualities of the area which is dominated by the Razorback Range.</p>
Picton Road and urban boundary west of Maldon Bridge Road	Incorporate Maldon’s employment areas which has the potential to be expanded in the future.
The Nepean River west and south of Maldon and Wilton Junction	Incorporate potential suitable land along Wilton Park Road.
Sydney Catchment Authority Special Area - No Entry	Exclude the Sydney Catchment Authority Special Area.
Georges River to the east of Appin	Maintain a natural boundary. Exclude vegetated areas west of the Georges River.
The extent of the Campbelltown existing urban area to the north east	Exclude existing urban areas.

Table 3 Urban Capable Boundary Elements and Purpose

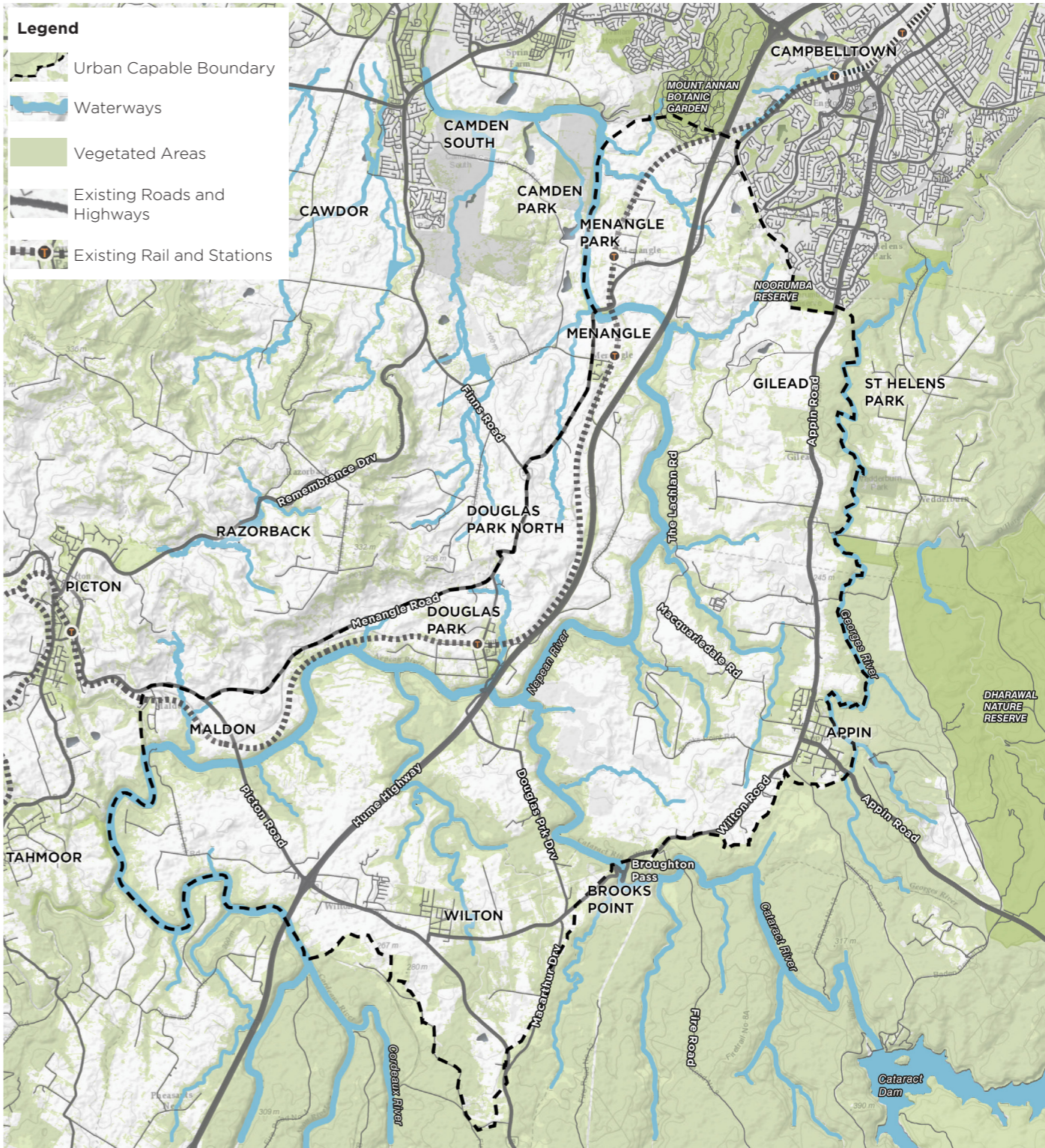


Figure 8 Urban Capable Boundary

Existing Values and Constraints

Waterways and Flooding

Streams

The study area is located within the catchments of the Nepean River and the Georges River. The Nepean River discharges to the Hawkesbury River while the Georges River drains to Botany Bay. The location of waterways within the study area is illustrated in Figure 9 – Waterways and Flooding.

The Strahler stream ordering system has been used to classify streams within the Study Area.

Lower Value Streams (first and second order)

First and second order watercourses are primarily located in the cleared, lower sloped sections of the study area. These waterways have been subject to a variety of agricultural pressures including clearing of riparian vegetation, unrestricted stock access and the construction of online farm dams.

Riparian corridor of first and second order streams are considered to be suitable for urban development. Water Sensitive Urban Design (WSUD) measures can be implemented within these corridors to manage water quality.

Higher Value Streams (third and above stream orders)

The majority of watercourses within the study area greater than second order are confined valley systems carved into the surrounding landscape. The rugged nature of these systems has resulted in these streams and their riparian corridors being relatively undisturbed and in good condition. These systems are also robust and are not prone to changes in channel form in response to alterations in hydrological regimes.

Urban development within the riparian corridors of third order streams may still be suitable for urban development with appropriate mitigation works.

Riparian corridors of fourth order streams and above are not considered suitable for urban development and should be protected.

Flooding

The overland flow path associated with the 100 year Average Recurrence Interval (ARI) flood event is largely limited within the watercourse gorges given they are generally relatively steep. However, land adjoining the Nepean River to the north of Douglas Park is relatively flat, resulting in overland flooding occurring in this area. The extent of land affected by the 100 year ARI flood event is illustrated in Figure 9 – Waterways and Flooding.

The NSW Flood Prone Land Policy aims to reduce the impact of flooding and flood liability on individual owners and occupiers of flood prone property and reduce public and private losses resulting from floods.

Flood prone land can have high value for rural uses such as grazing, cropping and market gardens, although siting of infrastructure outside of the floodplain would generally be required. However, land within the 100 year ARI flood zone is not considered to be suitable for urban development.

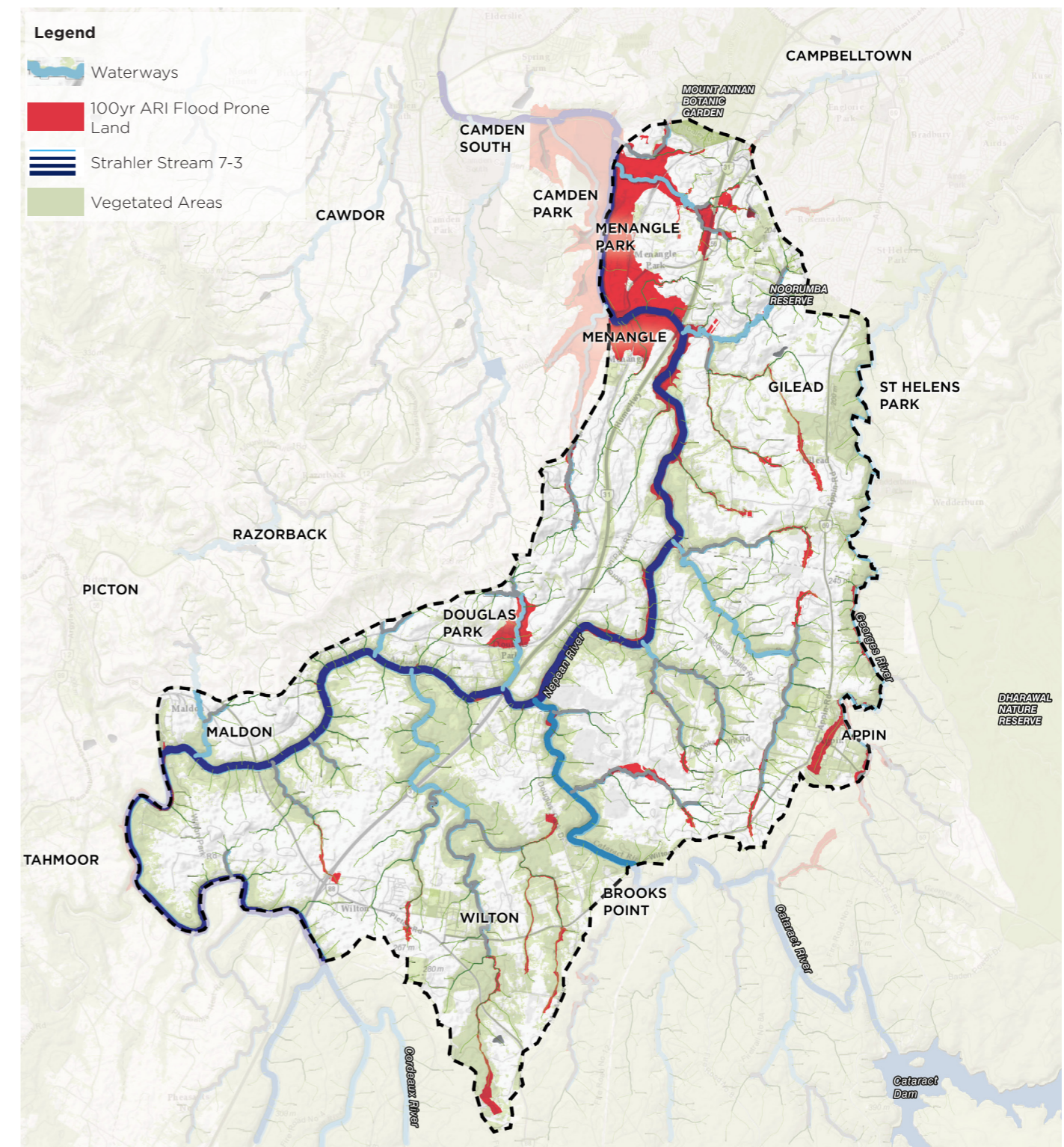


Figure 9 Waterways and Flooding

Biodiversity and Bushfire

All vegetation mapped as High Biodiversity Constraint is considered not suitable for urban development, refer to Figure 10 - Biodiversity.

High Biodiversity Constraint vegetation meets the following criteria:

- ▶ Biobank Sites;
- ▶ All native vegetation within the Priority Conservation Lands and Biodiversity Corridors; and
- ▶ Any native vegetation that is:
 - An Ecological Endangered Community (EEC) or a Critically Endangered Ecological Community (CEEC) outside of the Priority Conservation Lands and Biodiversity Corridors.
 - In Moderate-Good condition with greater than 10% canopy cover (NPWS, 2002).
 - A patch size greater than 10 hectares.

Biobank Sites

There are two Biobank Sites in the GMLRIA (registered under the TSC Act):

- ▶ Beulah (59.6 ha); and
- ▶ St Marys Tower (80.1 ha).

Biobank sites have an existing legal commitment to be managed for conservation purposes in perpetuity and therefore are not available for future urban development or infrastructure.

Priority Conservation Lands (PCL)

Priority Conservation Lands (PCL) were identified as part of the Cumberland Plain Recovery Plan (DECCW 2010), as areas that represent the best remaining opportunities in the region to secure long-term biodiversity benefits. These areas have also been targeted as contributing to suitable offsets for identified development across the Cumberland Plain in western Sydney, such as the North West Growth Centre and South West Growth Centre.

A total of 3,197 ha of native vegetation has been identified within these lands, made up of a number of vegetation types making up much of the significant biodiversity across the GMLRIA.

Hawkesbury Nepean Biodiversity Corridors

The Hawkesbury Nepean biodiversity corridors were developed by the NSW Office of Environment and Heritage (OEH) to identify connected, continuous vegetation between regional landscape features. The biodiversity corridors were mapped within and connecting to outside of the Hawkesbury Nepean Catchment area as part of a framework to identify opportunities for regional habitat connectivity. They identify the areas which are able to best consolidate the greatest overall regional biodiversity outcomes.

Asset Protection Zones

Asset Protection Zones (APZs) for bushfire protection purposes should be located wholly within the urban suitable land for new developments, not within high biodiversity constrained land. Vegetation clearance on a neighbour's property or on lands administered/owned by National Parks, the Crown or under the management of your local council is prohibited without written consent from the owner (RFS NSW 2015).

Urban development within constrained land

Limited urban development may occur in land identified as constrained, with the exception of Biobanking sites, if there is a need to smooth developable boundaries or where land owners have identified offset strategies for the clearing of land.

It is recommended that the impact of development on biodiversity will be considered as part of future rezoning processes, including opportunities for the enhancement of high value sites and corridors.

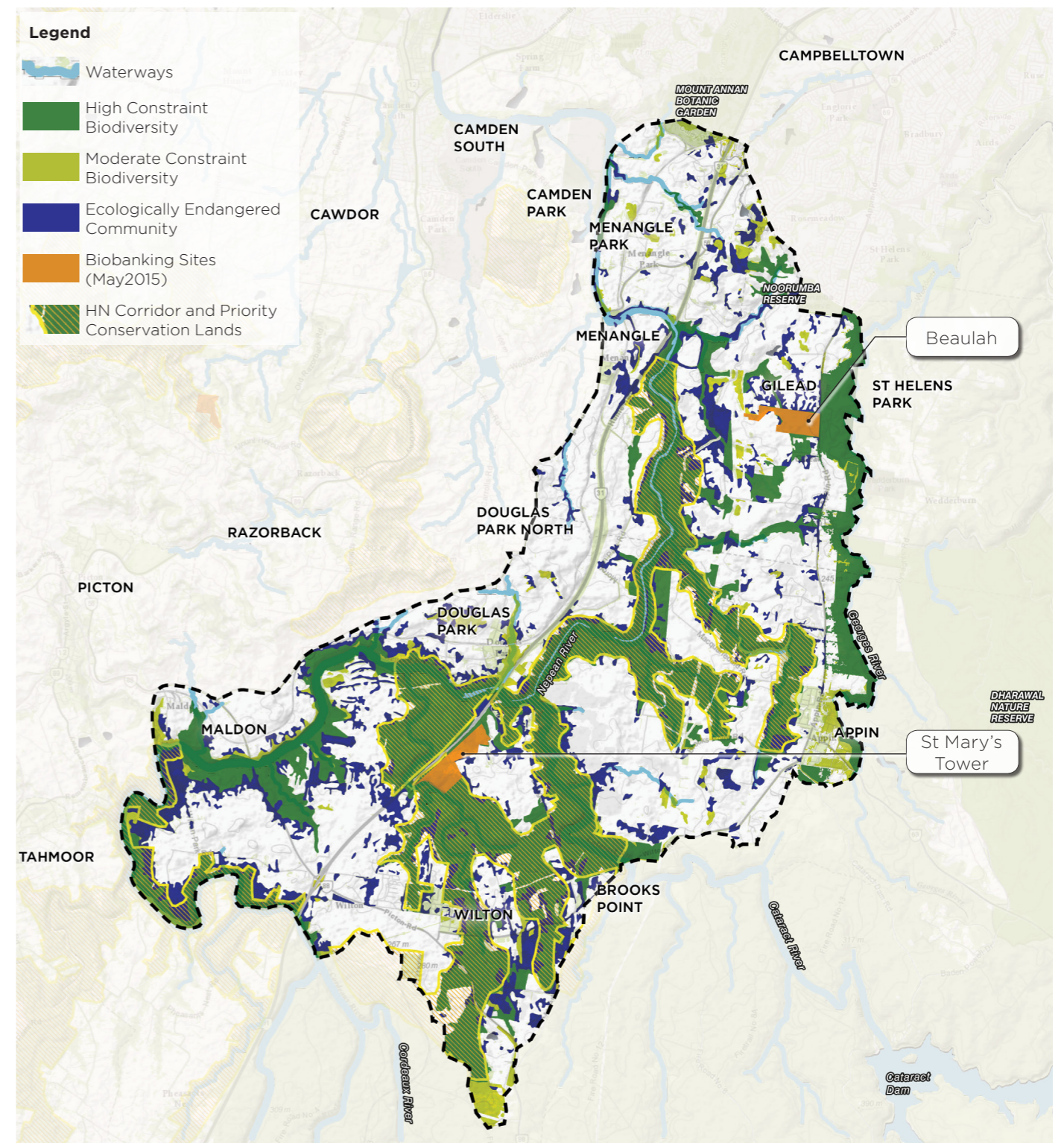


Figure 10 Biodiversity

Agriculture

The following infrastructure is located within the GMLRIA:

- ▶ 29 gas wells of which 18 are producing gas and 11 are suspended;
- ▶ Low-pressure underground gas gathering lines; and
- ▶ The Rosalind Park Gas Plant.

At the Rosalind Park Gas Plant, natural gas is compressed, dried, and made ready for distribution through the local natural gas network.

Appin and Tower Power Plants

The Appin and Tower Power Plants are two power generation plants, operated that use the waste coal mine gas (WCMG) from the Appin Mine and Tower Colliery as its fuel. The project produces a total 96MW of electricity (55 MW at the Appin Power Plan and 41MW at the Tower Power Plant). The plants are operated by Energy Development Limited (EDL).

Appin Power Plant is located along Northampton Dale Road, Appin while Tower Power Plant is located south of Douglass Park Road, Wilton

The following areas are considered encumbered for development:

- ▶ Land within 200 metres of an existing Coal Seam Gas well;
- ▶ Rosalind Park Gas Plant; and
- ▶ Appin and Tower Power Stations (Methane gas powered).

The required pathway to manage co-existence is detailed in the Greater Macarthur Preliminary Study and Action Plan.

Agriculture is a prominent land use in the study area.

The Office of Environment and Heritage (OEH) has developed a Land and Soil Capability Assessment Scheme (OEH 2012) to facilitate the assessment of land and soils for agriculture uses.

The capability of land to sustain a range of land uses and management is ranked in eight classes. Class 1 and Class 2 land are the highest value agriculture lands as they can be used for intensive vegetable production (Figure 12).

Class 2 Land (High Capability Soils)

There is no Class 1 land in the study area. The Class 2 land in the study area is currently being used for grazing and the irrigation of modified pastures and not higher value activities such as vegetable production.

Poultry Cluster

There is a cluster of poultry sheds located within the study area stretching from the north of Appin to Menangle which provide a significant contribution to poultry goods offered to the broader region.

Urban development within Encumbered Land

The poultry cluster and Class 2 land are identified as providing benefits to the area and wider region and should be retained. Accordingly, the land on which these are located are considered to be encumbered for urban development.

The required pathway to manage co-existence is detailed in the *Greater Macarthur Land Release Preliminary Strategy and Action Plan*.

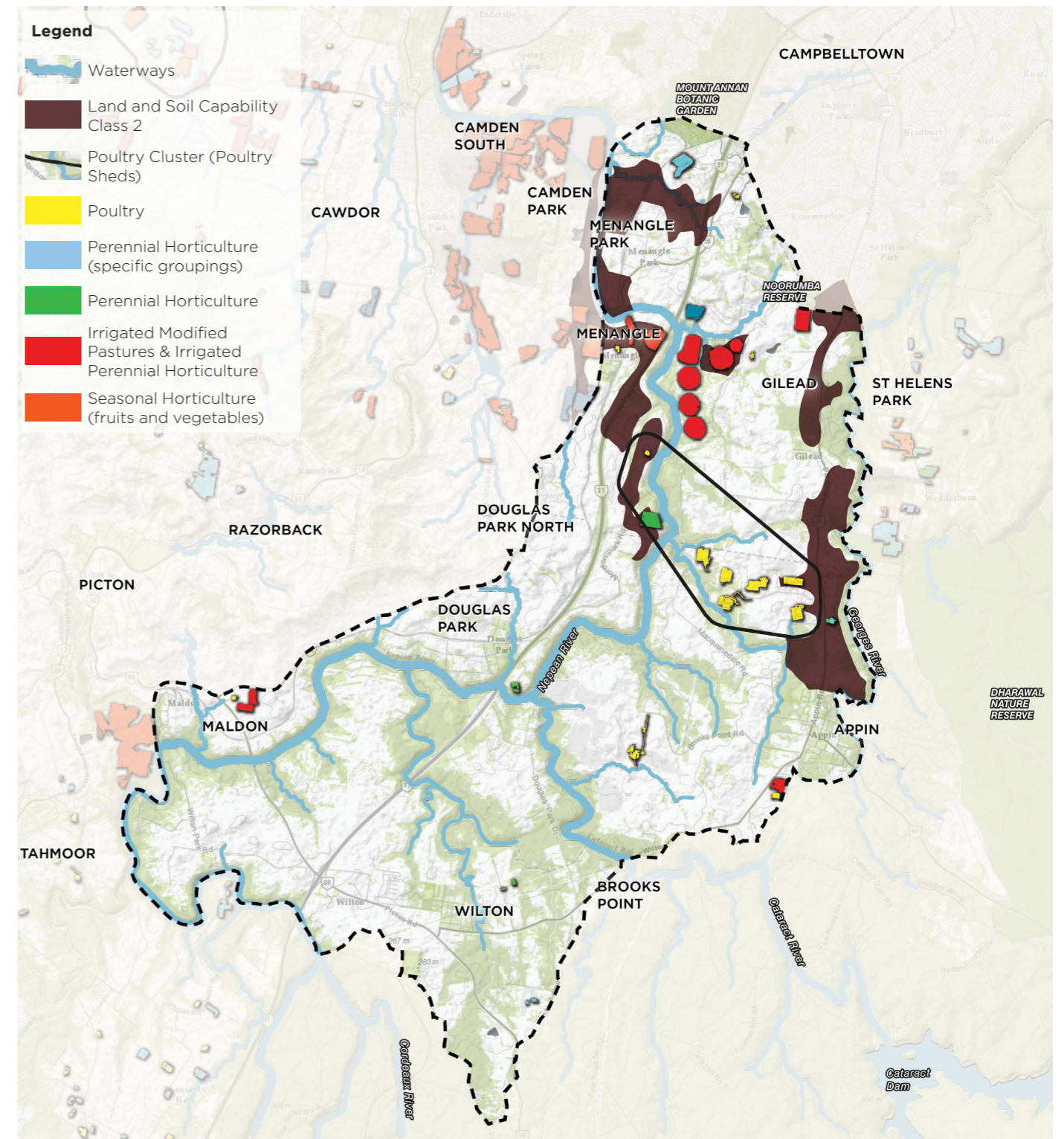


Figure 12 Agriculture and Land Soil Capability

Existing Values and Constraints

Heritage

The study area contains a number of significant heritage items and conservation areas of Aboriginal and European significance. It is important that the values of these items and conservation areas are conserved in order to preserve the character of the area and its history.

European Heritage

The investigation area formed part of the early agricultural expansion outside the immediate area of the early colony of Sydney. The majority of the better soils in the area were settled by MacArthur at Camden Farm (part of which lies within the GMLRIA). The agricultural/pastoral mix of the area changed over the course of the 19th Century but the rural nature was largely maintained until the post-WW2 period. Only Appin and Menangle townships provided commercial and service hubs for this landscape.

There are no listings on the World Heritage List, National Heritage List or Commonwealth Heritage List within the study area.

The State Heritage Register (SHR), State Heritage Inventory (SHI) and National Trust listings for the study area reflect the rural environment. Many of the listings relate to large and small scale agricultural/pastoral establishments. Other items listed in the SHR and the Register of National Estate (RNE) relate to transport, via the Menangle Railway Bridge and Station. Refer to Figure 13 – European Heritage.

For the purposes of future planning, there are eight sites listed on the State Heritage Register (Table 4) that are afforded the highest level of protection in NSW, and would constrain or inhibit any development within or in close proximity to their curtilages. These listings focus on rural places such as Beulah, Glenlee, Sugarloaf Farm, Camden Park but also include the late 19th Century Upper canal System (Pheasants Nest Weir to Prospect Reservoir) and the Menangle Railway Station Group and the Menangle Rail Bridge.

Name & Number of Item	Group/Collection	Primary Address	LGA
00009 - Glenlee; outbuildings, garden and gate lodge	Farming and grazing	Glenlee Road, Menangle Park, NSW 2563	Campbelltown
01389 - Sugarloaf Farm (Mt Huon)	Farming and grazing	Menangle Road, Gilead, NSW 2560	Campbelltown
00540 - Beulah	Landscape cultural	767 Appin Road, Gilead, NSW 2560	Campbelltown
01697 - Camden Park Estate and Belgenny Farm	Farming and grazing	Elizabeth Macarthur Avenue, Camden South, NSW 2568	Camden
01047 - Menangle Rail Bridge of Nepean River	Transport - Rail	Main Southern Railway, Menangle, Gilead, NSW 2571	Wollondilly
01191 - Menangle Railway Station group	Transport - Rail	Main Southern Railway, Menangle, NSW 2571	Wollondilly
01931 - Windmill Hill Group, including Ruins (other names: North Farm, Middle Farm aka Larkin Farm and Windmill Hill, South Farm, Steven's Homestead	Farming and grazing	Wilton Road, Appin, NSW 2560	Wollondilly
00257 - Wilton Park	Farming and grazing	Wilton Park Road, Wilton, NSW 2571	Wollondilly

Table 4 State Heritage Items within and adjoining the Study Area

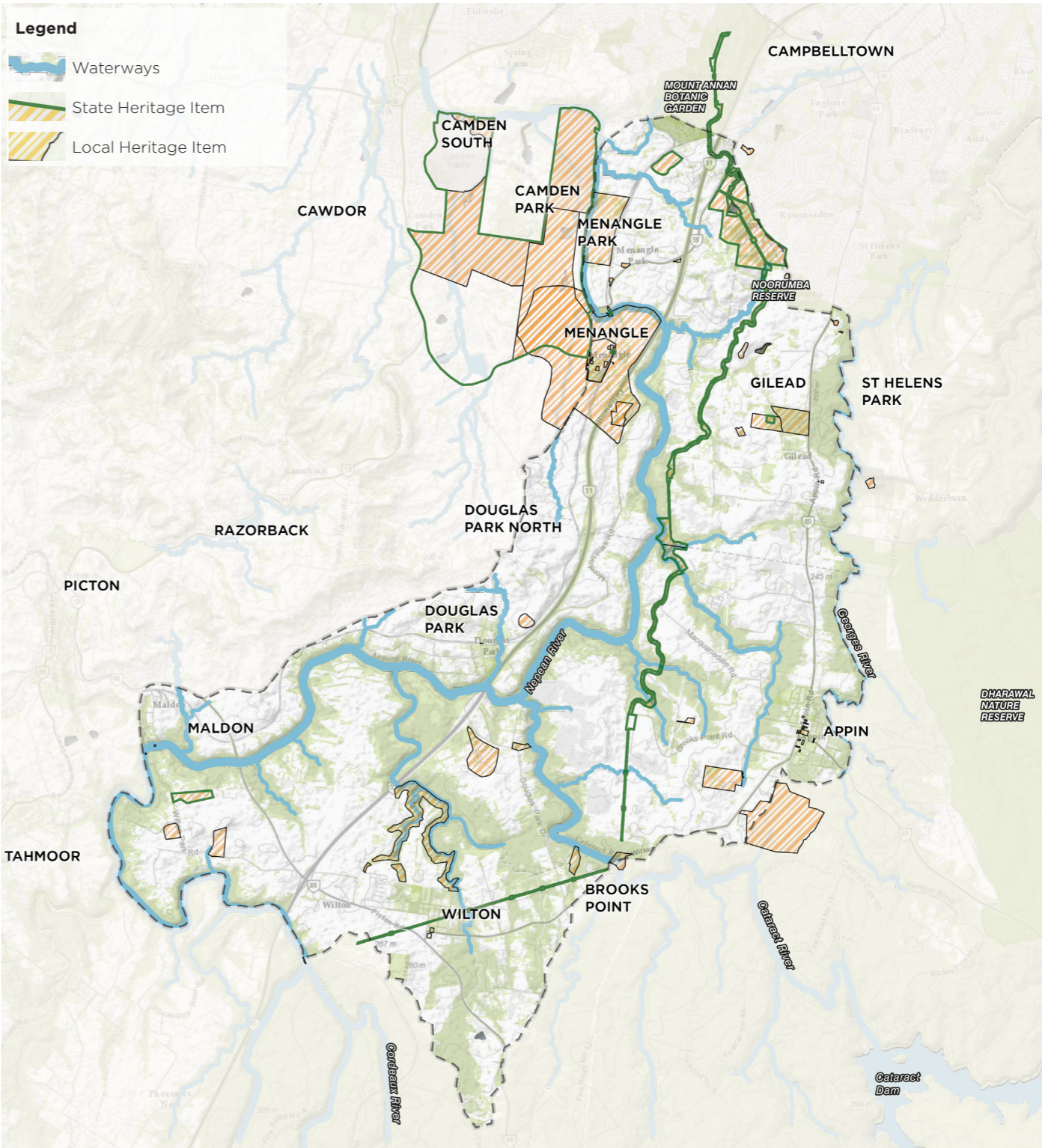


Figure 13 European Heritage

Aboriginal Heritage

The Darug, Dharawal and Gandangara tribes were the traditional custodians of the GMLRIA region, occupying the land for up to 14,000 years prior to European settlement. The study area is located at the interface between these three cultural linguistic groups and “would have met to feast, conduct business and perform ceremonies”, and that the inhabitants would have “harvested yams and other seasonal fruits and vegetables from river banks, caught eels, fish, and shellfish from creeks and lagoons, and hunted kangaroos, possums and waterbirds on the plains.” (AHMS 2015).

Identified in AHMS Ethnographic Sites map, the Darug inhabited much of the northern lands in the GMLRIA, bounded by the Razorback Range to the west, the Cataract River south and the Georges River to its east. East of the Georges River and north of the Cataract River, lands were inhabited by the Dharawal, with the remaining southern portion of the study area, south of the Nepean and Cataract Rivers inhabited by the Gandangara tribe.

There are currently 323 Aboriginal objects or sites that have been documented within the study area and their distribution suggests that artefact material were generally found within 200m of the larger river systems, closed sites with rock shelters particularly along creek lines. Evidence of their inhabitancy is based on a limited review of heritage studies conducted by AHMS as well as predictive modelling have identified high potential for Aboriginal objects/site to occur along the banks of the Cataract, Nepean, and Georges Rivers, and Allens, Elladale, Clemens, Cascade, and Wallandoola, creeks.

Aboriginal consultation undertaken by AHMS, including a cultural mapping workshop identified six areas of specific cultural value to the Aboriginal community (Figure 14), specifically:

1. Rocky Pond Creek massacre/burial area southwest of Appin, east of Douglas Park Drive near Cataract River was the site of a historical massacre;
2. Hanging tree associated with the massacre event where Aboriginal people were hanged.;Fishing and

story place is a stretch of the Nepean river, east of Menangle near Birdseye corner, that was known to have good fish and eels, and been extensively used by Aboriginal people in the recent past and continues to be used today;

3. A Historic building owned by BHP is a structure just north of Douglas Park, which is known to contain holes in the walls through which Aboriginal people were shot;
4. Barrigal lagoon – A stretch of the Nepean river, west of Menangle Park, that was known to have good fish and eels, and been extensively used by Aboriginal people in the recent past (although participants commented that the lagoons depended on seasonal floods and there had been no significant flood events since the 1980s. Activities nearby also included meetings and dancing, along with day-to-day subsistence; and
5. Canoe tree – a tree with large culturally created scar is known in the northern quadrant of Barrigal Lagoon.

The landscape as experienced by Aboriginal inhabitants has been subject to significant change over time, for example, patterns of hunting and gathering that had been followed by the Darug, Dharawal and Gandangara tribes for thousands of years consequently changed following European settlement and subsequent land grants when land was cleared and fenced. (CAHS, 2005).

Urban Development within Encumbered Land

Where particular heritage items or conservation areas are considered to have high significance, future development is required to:

- Integrate with the character of these items/areas;
- Incorporate adaptive reuses; or
- Provide sufficient curtilage to avoid diminishing their significance.

Site specific heritage impact assessments will be required to be undertaken to determine the appropriate treatment of heritage items and conservation areas.

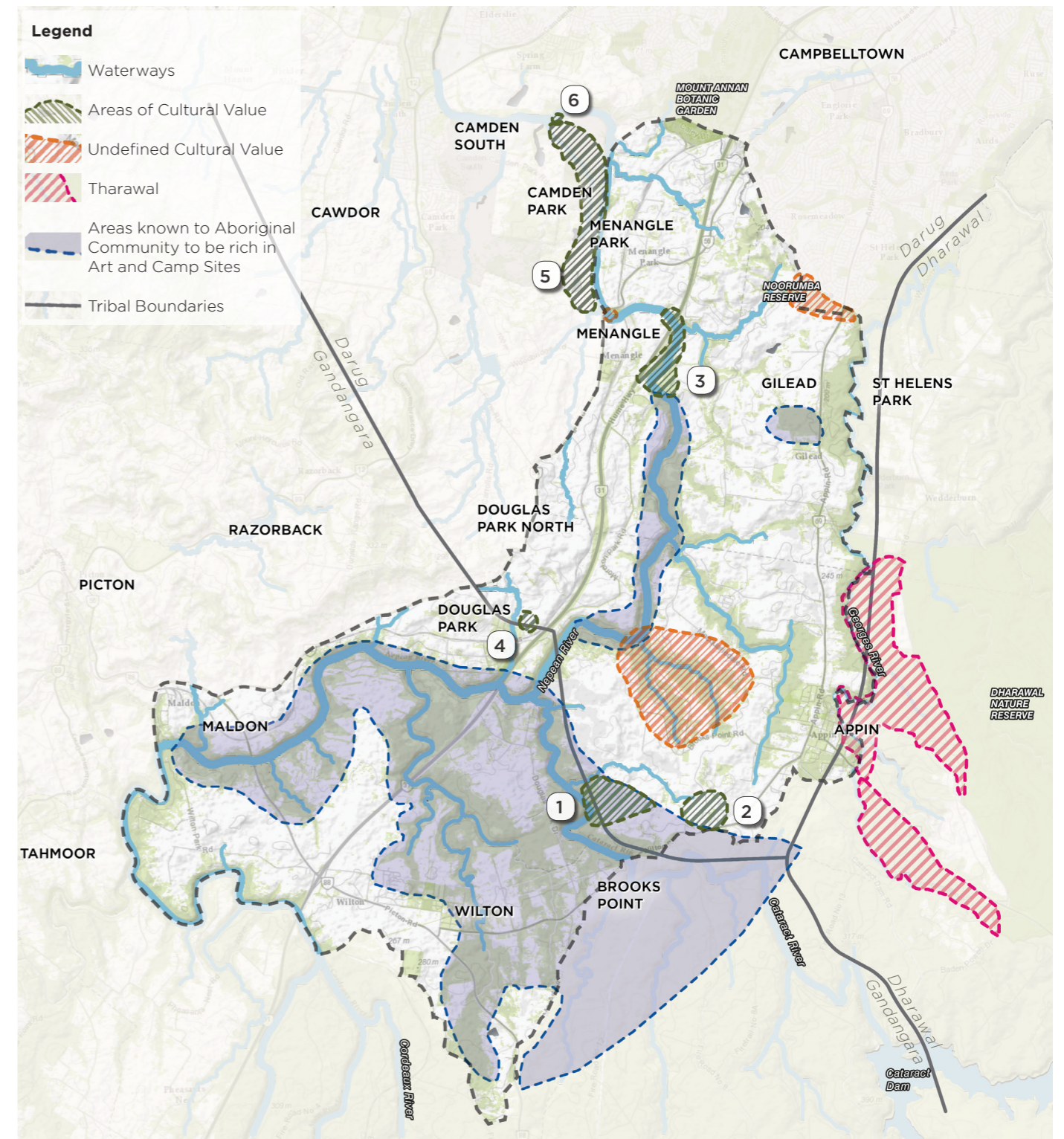


Figure 14 Aboriginal Heritage

Existing Values and Constraints

Landscape Character

The northern boundary of the GMLRI area is located immediately to the south west of existing residential urban fringe areas of Mt Annan and Ambarvale. The township of Wilton is located on the project area southern boundary and the existing industrial activities at Maldon are located on the project area west boundary.

The study area is located in the Nepean River valley between the slightly elevated and heavily forested ranges of the Dharawal State Recreation Area to the east and the abrupt and lightly treed razorback range to the west. Presently, it is primarily of an agricultural character divided into a number of discrete areas by high value vegetation adjacent to the waterways.

Significant built elements within the landscape of the setting include the Hume Highway, the Southern Highlands rail line and a number of high voltage (HV) transmission lines.

Geology and soils

The GMLRIA is located within the Sydney Basin Bioregion, and situated within two subregions:

- ▶ Primarily within the Cumberland subregion which is characterised by low rolling hills and wide valleys on Triassic Wianamatta group shales and sandstone. Historically, this subregion attracted settlement and pastoralism in the early 19th Century due to its agricultural suitability.
- ▶ The Sydney Cataract subregion on the eastern and southern boundaries of the GMLRIA which is defined by the Triassic Hawkesbury sandstone plateau on the coastal edge of the Sydney Basin. This subregion is composed of inaccessible deep disjointed sandstone valleys and escarpments with high potential for the presence of rock-shelters and overhangs, an area that would have attracted historical Aboriginal activity.

The GMLRI study area is situated on several soil landscape types:

- ▶ Residual Blacktown and Lucas Heights landscapes;
- ▶ Colluvial Hawkesbury and Picton landscapes;
- ▶ Erosional Luddenham landscape; and
- ▶ Fluvial Theresa Park landscape.

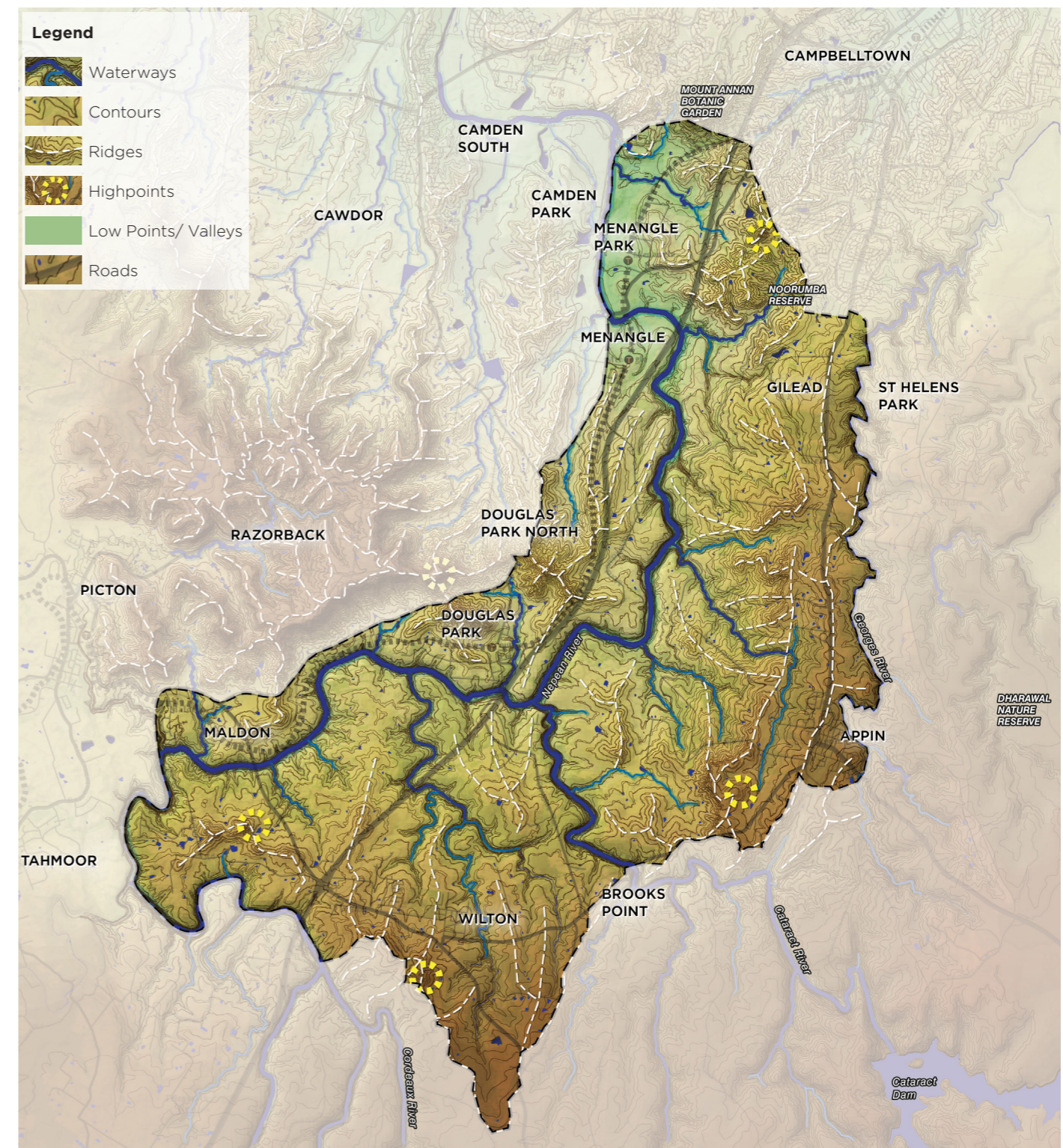


Figure 15 Terrain

Topography and slopes

The study area is characterised by low lying and flat land in the lower reaches of the Nepean River north of Menangle. South of Menangle the topography is undulating with most of the slopes below 15% which are suitable for urban development. Areas with slopes between 15% and 20% are mostly confined to an area north west of Mt Gilead.

Most of the slopes over 20% are confined to gorges and creek beds. Ridgelines with slopes over 20% provide important scenic values for tourists and residents. These areas are unsuitable for urban development and have limited agricultural value.

The Razorback Range sits on the western side of the study area and provides an impact scenic value when travelling along Menangle Road. Refer to Figure 16 – Topography and Slopes.

Landscape Units

Landscape units for the region are defined based on physical characteristics such as:

- ▶ Topography;
- ▶ Vegetation;
- ▶ Drainage patterns;
- ▶ Geology; and
- ▶ Land use patterns.

Based on the assessment of landscape character types, scenic quality and landscape absorptive capability, the local and sub-regional setting of the study area can be divided into the landscape units illustrated in Table 5 and Figure 17 – Landscape Units (overleaf).

Landscape Scenic Quality

The scenic quality of a setting will be assessed to assist with the determination of potential landscape impacts of proposed development. The scenic quality of landscapes generally increases with an increase in:

- ▶ Topographic variation;
- ▶ The presence of geological features;
- ▶ The presence of permanent water bodies; and
- ▶ Patterning of vegetation texture and density.

Landscape Absorptive Capability

The definition of landscape absorptive quality is an assessment of how well a landscape setting is able to accommodate change or a development and is generally applied at a broader scale as opposed to localised visual modifications.

The key factors considered in determining absorptive capability are topography and vegetation. In areas of flatter topography, overlooking is not possible and a low and thin band of vegetation is able to screen views to a development from a given viewpoint. In areas of undulating or elevated topography, overlooking can occur and vegetation needs to be higher and denser to achieve effective screening. Intervening undulating topography also has the potential to block views in certain landscapes.

Landscape character and topography will be important considerations in determining the appropriate density and form of any development opportunities identified in the GMLRIA.

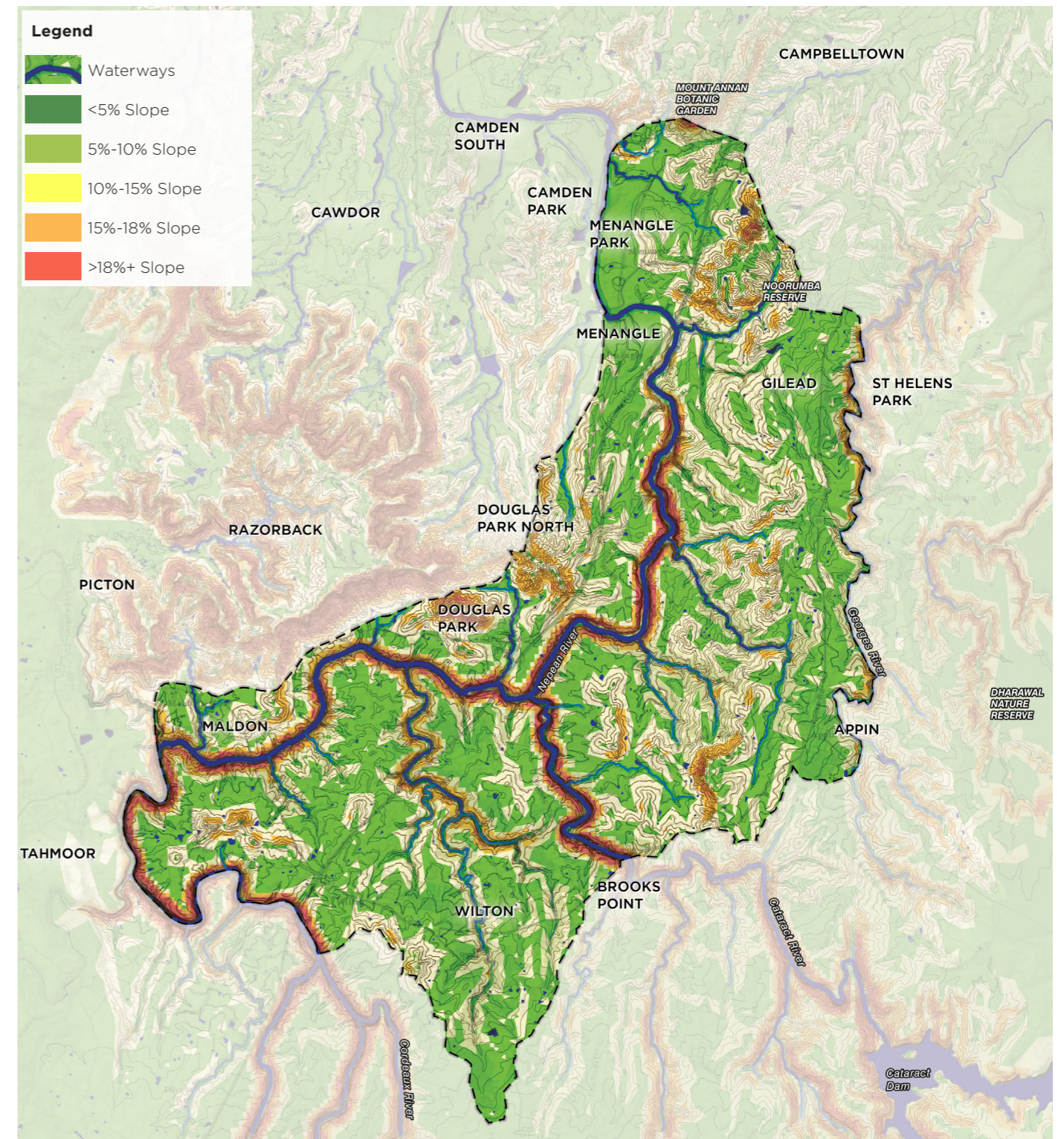


Figure 16 Topography and Slopes

Existing Values and Constraints

LANDSCAPE UNIT AREA	SCENIC QUALITY	CHARACTERISTICS	ABSORPTIVE CAPABILITY
Unit 1 - Razorback Range (part range of high steep hills that make up the Macarthur Region and is part of the hills that are in between the Blue Mountain and Southern Highland regions)	High	<ul style="list-style-type: none"> Steep exposed slopes over 18% with uneven ridgeline Large feature landform of unusual form that is highly dominant Strongly defined patterns resulting from combinations of eucalypt forest and treeless areas 	Low
Unit 2 - Scenic Hills (identified hills that make up the Campbelltown Scenic Hills LU5)	Low to Moderate	<ul style="list-style-type: none"> Low rounded feature landforms that are features in the landscape, particularly when viewed from surrounding residential areas. Relatively low setting except for Mount Sugarloaf at southern most portion. Cleared and altered landscapes. 	Moderate
Unit 3 - The Nepean River, Cataract River Georges River and tributaries Riparian Zone (the river course and dense surrounding vegetation)	High	<ul style="list-style-type: none"> Incised river valley Exposed rock ledges Dense vegetation Riffles in river course 	Low
Unit 4 - Forested Hills and Ridgelines (ridgelines and upper slopes with tree cover)	High	<ul style="list-style-type: none"> Steep slopes over 15% with uneven skyline Small rock outcrops contrasting with the surrounding landscape Dense stands of indigenous vegetation Streams, lakes, reservoirs or swamps 	Low
Unit 5 - Rural Townships and Settlements (small isolated settled areas)	Moderate to High	<ul style="list-style-type: none"> Presence of mature, exotic vegetation Presence of historic buildings and other built form 	Moderate to High
Unit 6 - Residential (low density residential/ rural-urban fringe)	Low	<ul style="list-style-type: none"> Highly modified setting Minimal natural features 	High
Unit 7 - Open Pastoral Valley (valley floors with few, if any trees)	Low	<ul style="list-style-type: none"> Valley floor within flood plains with few if any trees Extensive clearing and highly altered landscapes Minimal topographic variation 	Low to Moderate
Unit 8 - Open Pastoral Uplands (elevated uplands with generally even terrain and few, if any trees)	Low to Moderate	<ul style="list-style-type: none"> Elevated areas with few if any trees. Extensive clearing and highly altered landscapes Minimal topographic variation 	Low to Moderate
Unit 9 - Scattered Woodland (even terrained areas with a scattered distribution of tree cover)	Low to Moderate	<ul style="list-style-type: none"> Extensive clearing and highly altered landscapes Scattered blocks of vegetation Wide even slight topographic variation 	Moderate
Unit 10 - Foothills	Moderate	<ul style="list-style-type: none"> Rising topography transitioning to 10%. Scattered vegetation transitioning from denser with a natural edge pattern on the upper slopes to more open and ordered cultural plantings on the lower slopes 	Low to Moderate

Table 5 Landscape Units

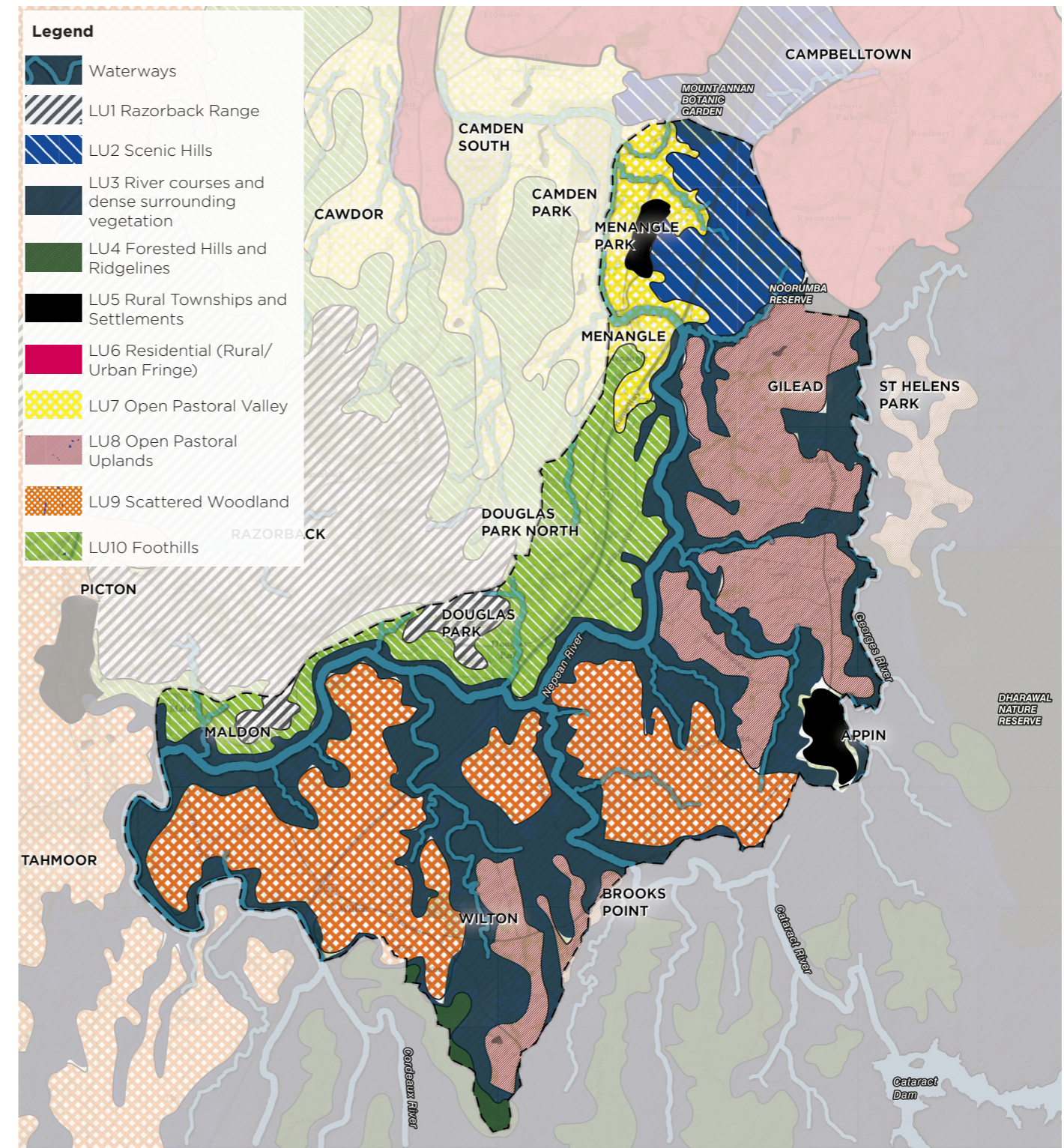


Figure 17 Landscape Units



Photo 1 Landscape Unit 1- Razorback Range (part range of high steep hills that make up the Macarthur Region and is part of the hills that are in between the Blue Mountain and Southern Highland regions)



Photo 2 Landscape Unit 2 - Scenic Hills (identified hills that make up the Campbelltown Scenic Hills)



Photo 3 Landscape Unit 3- -The Nepean River, Cataract River Georges River and tributaries Riparian Zone (the river course and dense surrounding vegetation)



Photo 4 Landscape Unit 4 - Forested Hills and Ridgelines (ridgelines and upper slopes with tree cover)



Photo 5 Landscape Unit 5 - Rural Townships and Settlements, small isolated settled areas. (Picton shown)



Photo 6 Landscape Unit 6 - Residential (low density residential/ rural-urban fringe)



Photo 7 Landscape Unit 7 - Open Pastoral Valley (valley floors with few, if any trees)



Photo 8 Open Pastoral Uplands (Elevated uplands with generally even terrain and few, if any trees)



Photo 9 Scattered Woodland (even terrained areas with a scattered distribution of tree cover)



Photo 10 Landscape Unit 9 - Foothills

Existing Values and Constraints

Tourism

Tourism is associated with visitation by people from “outside their usual environment for not more than one consecutive year for leisure, business and other purposes” (World Tourism Organisation). The GMLRIA contains many areas visited by tourists and valued by locals typically consisting of high scenic values such as those associated with undeveloped ridgelines, areas of high slope and heritage assets which provide important scenic, recreational and leisure values for both visitors and residents.

Areas within GMLRIA include heritage and tourism assets that form an important recreational and leisure amenity. Agricultural lands also provide a link between urban Sydney and rural NSW, which has value from a tourism perspective such as road side produce sales, farmers markets and agricultural vistas.

An indicative list of attractions within the Campbelltown LGA include:

- ▶ Australian Botanic Garden, Mount Annan;
- ▶ Dharawal National Park;
- ▶ Georges River;
- ▶ Nepean River;
- ▶ Belgenny Farm;
- ▶ Camden Park House;
- ▶ Camden Park Environmental Centre;
- ▶ Camden Community Gardens; and
- ▶ Other specialist tourism operations such as:
 - Camden Estate Wines;
 - Camden Saleyards;
 - Camden Town Farm;
 - Cogno Brothers / Cobbitty Winery;
 - Frere’s Crossing Reserve;
 - Gledswood Homestead and its “Homestead Wines”;
 - Glenalvon House - Campbelltown and Airds Historical Society; and
 - Infusion Bar and Microbrewery.

An indicative list of attractions within the Wollondilly LGA include:

- ▶ Thirlmere Lakes National Park;
- ▶ Burragorang Lookout;
- ▶ Razorback Lookout south of Tahmoor;
- ▶ Bargo State Recreational Area, incorporating Little River offers a number of bushwalks popular with local people including walks into the Nattai Valley;
- ▶ Bents Basin State Recreational Area, on the north west of the Wollondilly LGA;
- ▶ The Wollondilly Heritage Centre & Museum;
- ▶ Wirrimbirra Sanctuary at Bargo Village;
- ▶ Glenmore House;
- ▶ Wollondilly Harvest Experience;
- ▶ Wilton Markets; and
- ▶ Other specialist tourism operations such as:
 - Trainworks; and
 - Appin House Wedding & Function Centre.

Compatibility/Sequencing

Some public open space used for tourism and recreation, such as National Park estate, is protected and is not subject to competition from urban development. Private land enjoyed for its vistas may be lost to new development. Land on ridge-lines may be protected as it is not suitable for housing and agriculture. Private sector provided tourism sites zoned for urban development can still be utilised for tourism pending a decision to sell and active site development.

Air Quality

Photochemical smog (ozone) and particle pollution continue to exceed national air quality standards in the Sydney basin, including in the Macarthur region, with poor air quality on 4 to 11 days per year over years 2010 to 2014. The air quality within the region is influenced by topographical features, such as the Blue Mountains, which prevent the dispersal of pollutants transported from other parts of the Sydney Basin and therefore increase local pollution levels. (Response by MACROC to the Final Report of the Inquiry into Health Impacts of Air Pollution in the Sydney Basin).

While all parts of Sydney can experience ozone concentrations above national standards at some time, the north-west, west and south-west of the city often experience higher levels. Minimising ozone pollution requires the management of precursor pollutants such as nitrogen oxides and volatile organic compounds emitted locally and across the basin. Minimising exposure to particle pollution is also a priority as exposure to particles imposes substantial health impacts and costs.

Future development and population growth in Western Sydney could affect air quality and increased exposures to air pollution and associated health effects and costs. This growth and development however also present opportunities for improving air quality and reducing exposure to air pollution through urban planning, resulting in health and wellbeing benefits.

In recognition of the need to continue to manage air quality issues the Department of Planning and Environment, the NSW Environment Protection Authority and the Office of Environment and Heritage have agreed to establish a Priority Growth Area air technical working group to inform ongoing planning decisions. The group will involve other agencies such as NSW Health and Transport for NSW.

A key focus of the group will be to ensure that issues and opportunities related to air quality are integrated in growth planning so as to improve Sydney’s air quality with reference to national ambient air quality standards. This group will work to ensure that:

- ▶ Potential new sources of particles or ozone precursors use best practice to minimise emissions (e.g. from wood heaters, construction, vehicles, distributed energy, and other commercial, domestic and industrial sources);
- ▶ Exposure to air pollution and odours are minimised, both in areas close to specific sources such as busy roads, construction and industry, and broader population exposures to air pollution; and
- ▶ Robust information on past, current and projected future air quality and exposures to air pollution is made available to decision makers engaged in implementing future land release.

Existing and Planned Infrastructure Capacity

Utilities

Existing Services Infrastructure networks in the investigation area are generally limited, supplying only to the existing and current semi-rural developments. The existing networks area generally aligned with the existing roads, with the majority of existing trunk services contained within the Wilton Road, Douglas Park Road, Appin Road and between Hume Highway and Appin Road alignment.

Potable Water

The MacArthur Water Filtration Plant (WFP) and Appin Reservoir service the existing urban and rural areas within the study area.

The Macarthur Water Filtration Plant (WFP) extracts raw water from Broughtons Pass Weir to supply the Camden, Campbelltown and Wollondilly council areas. The Plant has a design capacity of 265 MLD, however, due to the turbidity issue of raw water the treatment capacity is understood to be limited to 130 MLD. It supplies developments in Wilton (including Bingara Gorge), Appin and Douglas Park, as well as Appin east colliery, Appin west colliery, Ingham poultry and the mines.

In addition, Sydney Water has commenced a construction of a 2ML reservoir to service the Bingara Gorge Development.

The supply of potable water to Menangle Park, Maldon and Mt Gilead is to be achieved through private connections to the Sydney Water network that is located outside the study area, in particular:

- ▶ Menangle Park serviced by Campbelltown South Water Supply Zone;
- ▶ The Mt Gilead Planning Proposal serviced by the Rosemeadow Water Supply Zone; and
- ▶ Maldon serviced by the Nepean Water Filtration Plant.

Sydney Water recently commenced an assessment on required amplification of the Macarthur WFP as part of the South West Growth Management Strategy.

There are limited number of trunk mains and reticulation mains within the investigation area.

Recycled Water

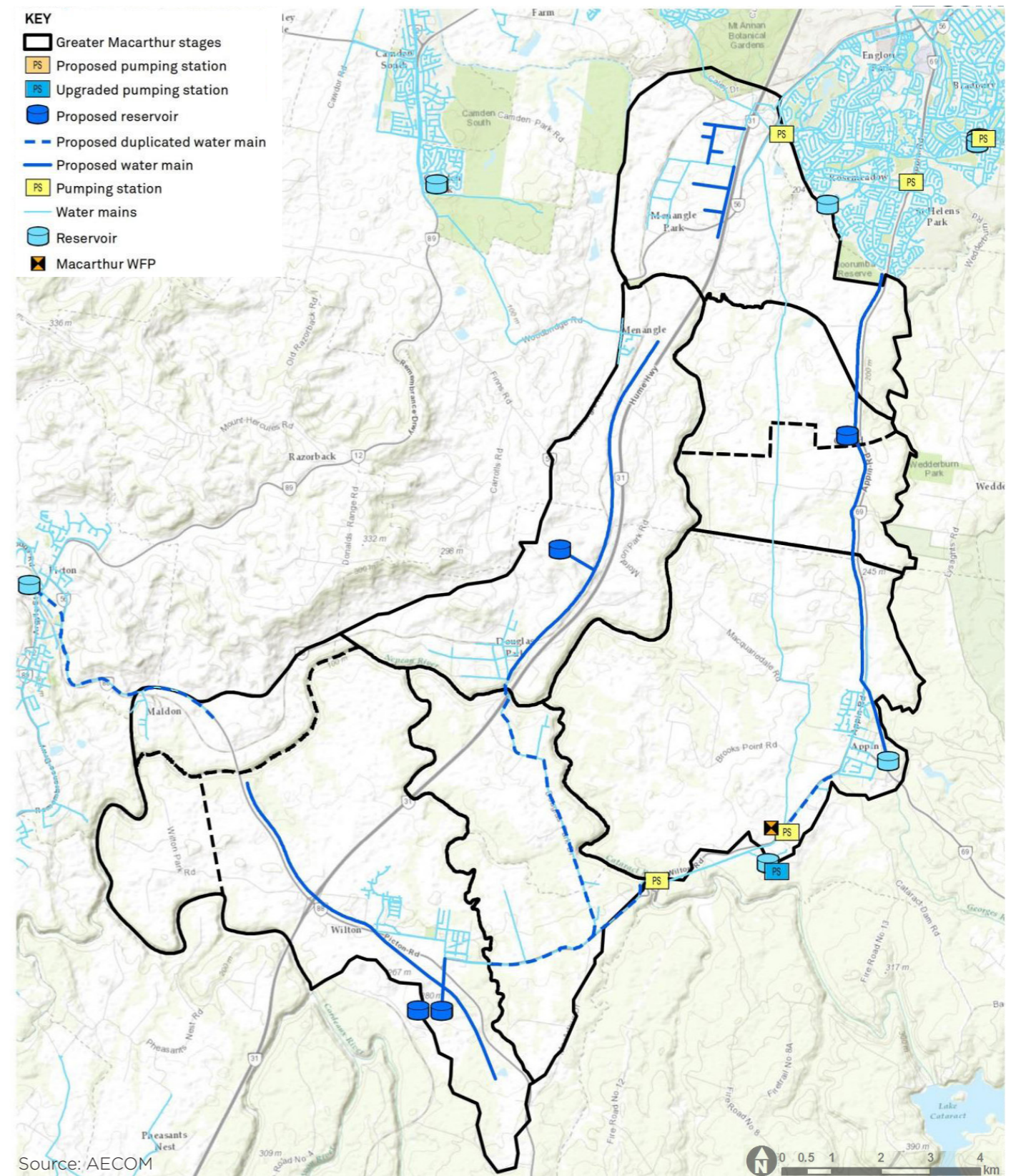
Sydney Water does not currently operate any recycle water service within the investigation area.

There are recycle water network on the adjacent areas of Picton, Glenfield and West Camden. The Metropolitan Water Directorate indicates that there is water recycling systems currently operating within the investigation area at Appin and Douglas Park. A reservoir at Wilton (owned and operated by a private developer) only has the capacity to provide to Bingara Gorge Development.

Opportunities to service the investigation area include:

- ▶ Glenfield Water Recycling Plant, which has a limited short term capacity to service growth around Appin until 2020; and
- ▶ Rosemeadow Reservoir, which has a potential to service the north eastern areas including Mt Gilead.

Figure 18 Indicative Water Infrastructure Augmentation and Upgrade Plan



Existing Values and Constraints

Sewer Network

The review of the existing sewer networks indicates limited sewer mains present within the study area. Existing pressure sewer trunk mains are located within Appin Village, sewer mains within Wilton Village and reticulated network in Douglas Park.

The Glenfield WRP currently service North Appin through a pressure sewer main that traverse along Appin Road via Rosemeadow pumping station, which is then discharge to Malabar Waste Water Treatment Plant.

Sydney Water's Priority Sewerage Program (PSP) has recently provided reticulated pressure sewerage systems to service the urban village of Appin, Douglas Park (154 properties) and the village of Wilton (260 properties).

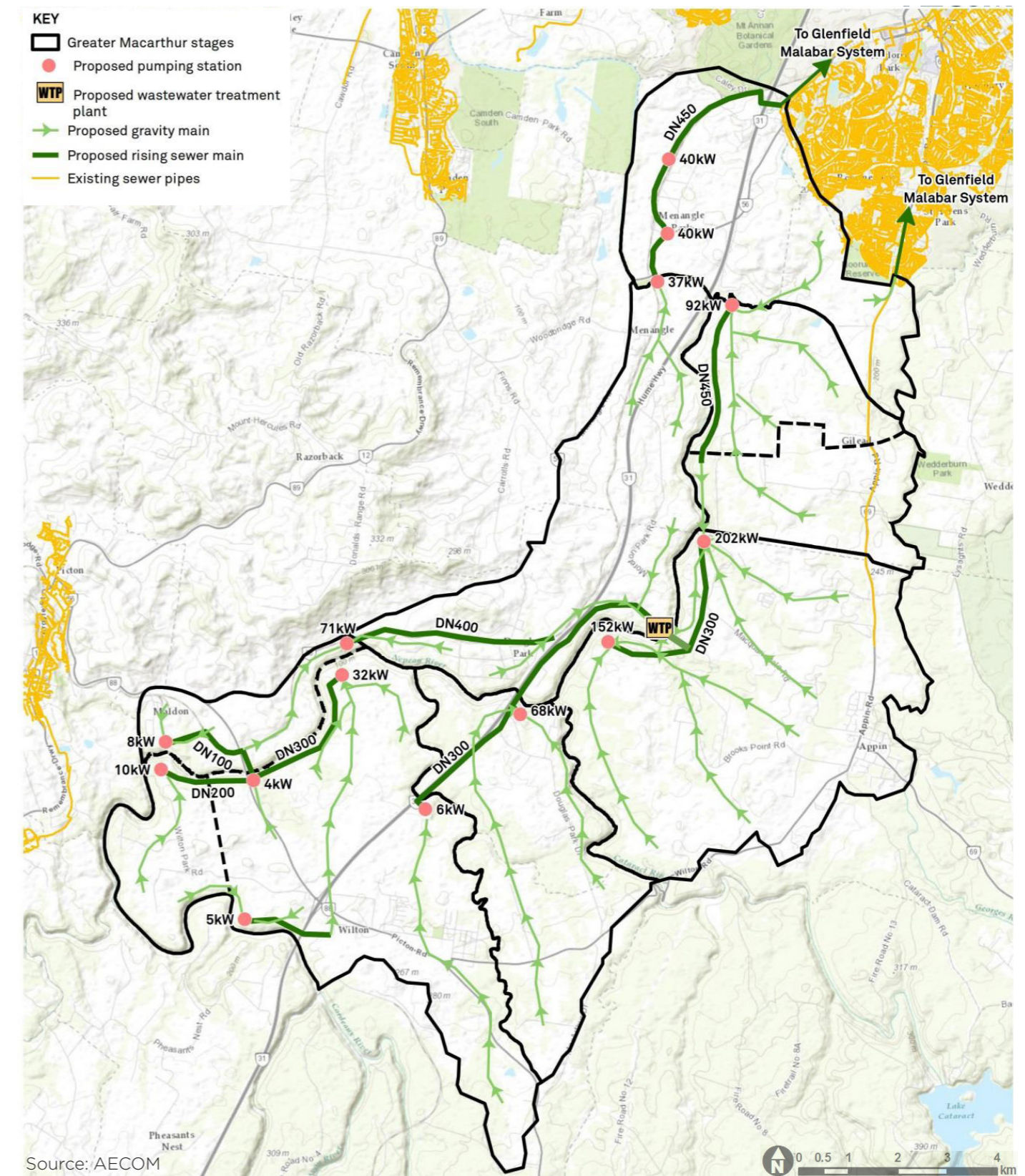
The existing systems are serviced by a range of wastewater transportation and treatment schemes. These include:

- ▶ Douglas Park wastewater is collected and stored at Moreton Park and transported by tanker trucks to Sydney Water's wastewater pumping station on Camden Valley Road at Catherine Field;
- ▶ Appin wastewater is collected and transferred to Glenfield Water Recycling Plant;
- ▶ Wilton's wastewater is collected and transferred to the Bingara Gorge wastewater network for treatment; and
- ▶ The villages of Menangle and Menangle Park which are currently unsewered and are serviced by on-site sewerage systems.

The design capacity of the reticulated system is limited to 450 L/household/day. However, future connections to the network are not guaranteed as it will be dependent on the size of the development and existing capacity in the system.

A private reticulated water treatment plant currently operates at Bingara Gorge.

Figure 19 Indicative Sewer Infrastructure Augmentation and Upgrade Plan



Electricity Network

Electricity from the Appin and Tower power stations is transmitted to Macarthur Bulk Supply Point (BSP) where the voltage is dropped prior to being fed to zone substations. Macarthur BSP has been established to serve as a bulk supply to the South West Growth Sector.

Endeavour Energy and TransGrid have limited infrastructure adjacent and within the study area as summarised below:

- ▶ Douglas Park Switching Station (Connection point);
- ▶ Appin Zone Substations (15 MVA);
- ▶ Campbelltown Zone Substations (105 MVA);
- ▶ Ambarvale Zone Substations (70 MVA);
- ▶ Maldon Zone Substation (11 kV);
- ▶ Wilton Zone Substations (11 kV);
- ▶ Macarthur BSP; and
- ▶ Macarthur Feeder (132 kV).

The network provides all existing development within the study area, with the exclusion of Wilton which is serviced by a privately owned substation. Endeavour Energy has proposed a 33kv line to Menangle Park and a zone substation at Wilton to service Bingara Gorge.

In addition to the above network, the study area is traversed by the Sydney West to Sydney North TransGrid 330/132kV aerial transmission line. This infrastructure will not be used to supply the development; however the transmission line and it's easement will need to be accommodated in the development area.

Additional infrastructure will be required to support growth in the study area. The specific requirements for each area is detailed in the Precinct Analysis section of this report.

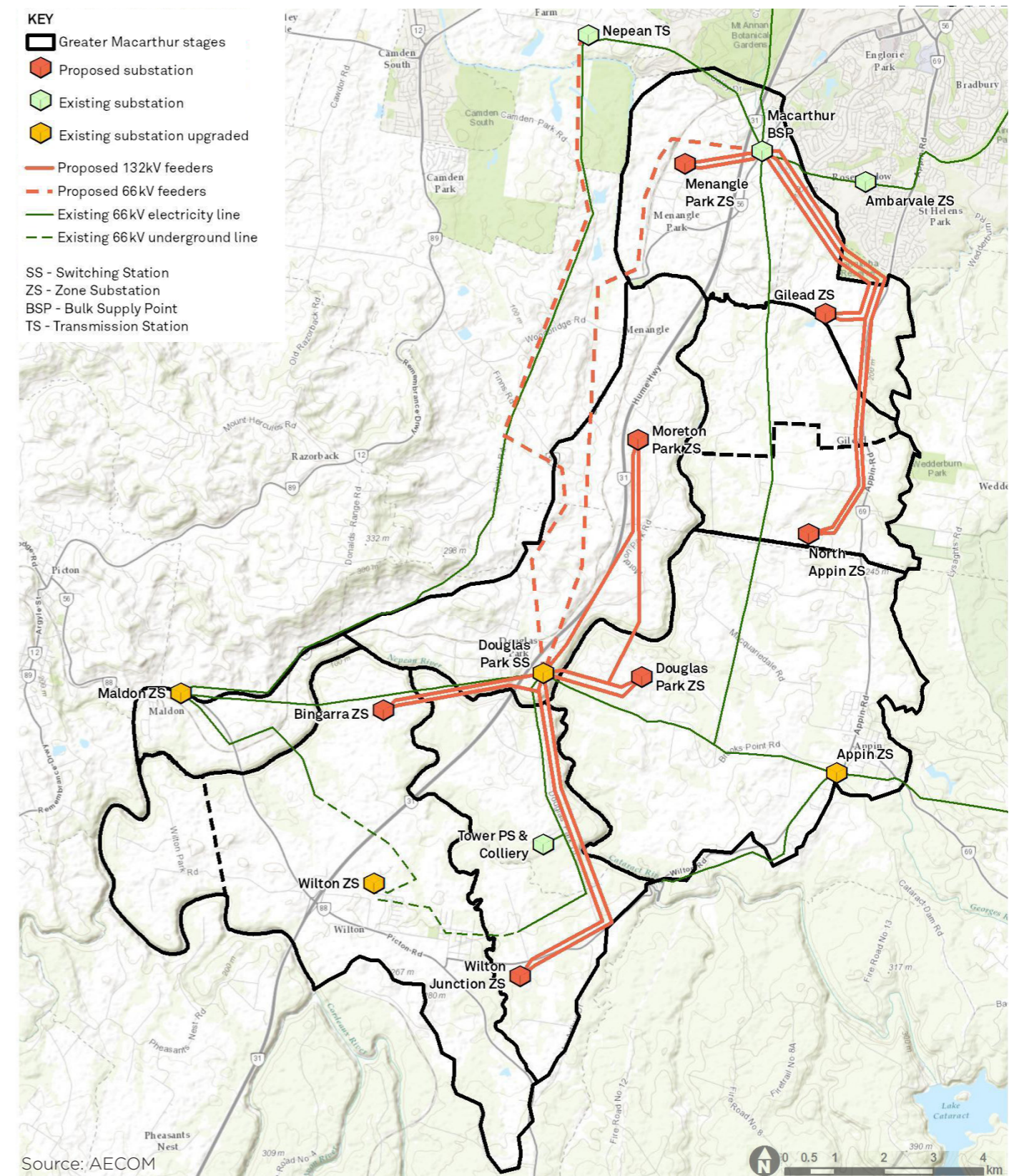
Natural Gas Network

Jemena supplies the study area through a combination of high pressure and reticulation mains. There is a limited gas reticulation within the study area, primarily within Wilton including Bingarra Gorge and Appin township.

Telecommunications Networks

The existing network is a combination of aerial and buried optic cable. The National Broadband Network (NBN) is currently operating at Appin.

Figure 20 Indicative Electrical Infrastructure Augmentation and Upgrade Plan



Existing Values and Constraints

Social infrastructure

Schools and Education

There are currently 5,085 school-aged children (between 5 to 18 years of age) who live in the southern Campbelltown suburbs adjoining the study area.

The existing rural population of the GMLRIA is well served by existing primary schools within the study area and in the surrounding region. However, there are relatively few high schools in the study area, with the closest being located outside of the study area in Ambarvale and Rosemeadow to the north-east. High school-aged children, particularly those living in the southern portion of the study area (i.e. Appin and Wilton), may need to travel extensive distances to get to school.

Tertiary education is primarily provided by the University of Western Sydney and TAFE NSW South Western Sydney, with the University of Sydney’s campus for agricultural and environmental studies based in the Camden area. Similarly to high schools, residents in the southern portion of the study area have greater distances to travel.

While there are only two primary schools and one combined school (both primary and secondary) within the study area, adjoining areas, particularly in the immediate areas south of Campbelltown are served by four primary schools, one special school and three secondary schools. There are also three primary schools and a combined school to the south-west of the study area.

The quantum of schools which serve the study area is summarised in Table 6 and illustrated in Figure 21 – Location of Existing Schools and Educational Facilities.

School Type	Primary Schools	Combined Schools	High Schools
Public	9	1	2
Private	1	2	1
Total	10	3	3

Table 6 Existing Schools

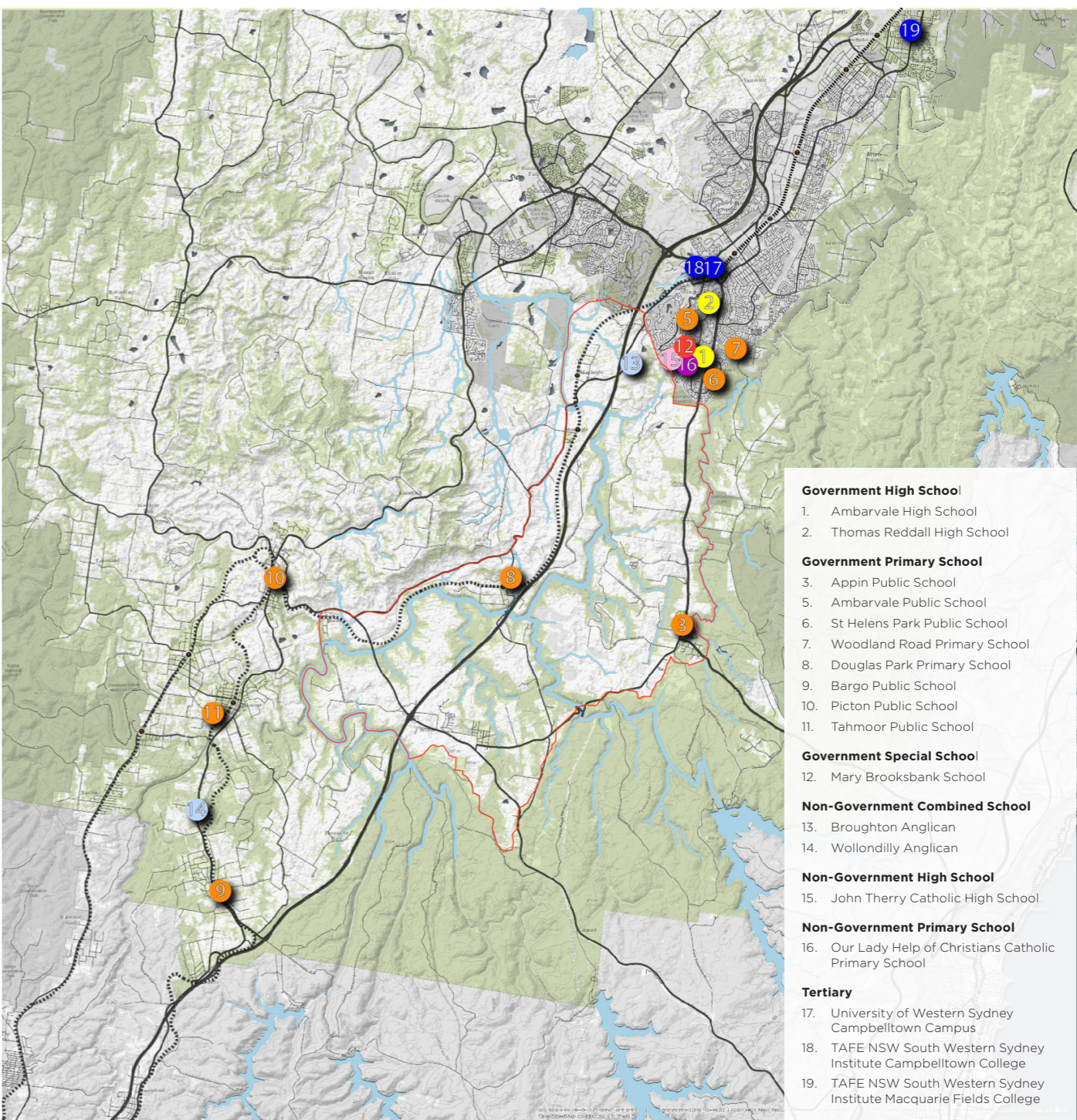
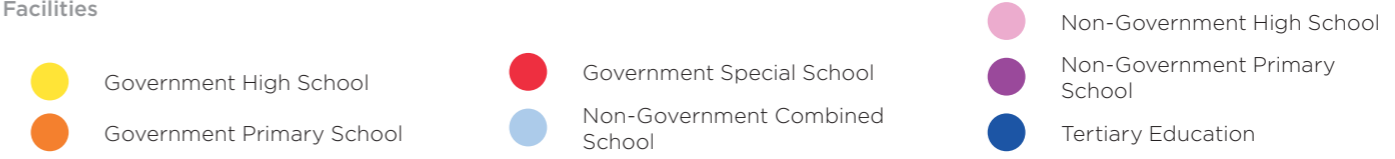


Figure 21 Location of Existing Schools and Educational Facilities



Health Facilities

There are no existing regional health facilities located in the GMLRIA with residents predominantly travelling north to seek treatment. Medical, surgery, emergency and rehabilitation services in the Macarthur Region are provided by the NSW Department of Health through the South Western Sydney Local Health District (SWSLHD). Health services comprise two public metropolitan hospitals, three community health centres and one youth health service. Illustrated in Figure 22 - Location of Existing Health Facilities, the closest hospitals to the study area are Campbelltown (9km north-east of Menangle), Bowral (44km south-west of Wilton) and Liverpool Hospital (37km north-east of Menangle Park).

Emergency Services

The northern portion of the study area, such as Menangle Park and south of Campbelltown, are well serviced by emergency services based in Campbelltown which include police, fire and rescue, ambulance, two hospitals and state emergency services.

The southern portion of the study area can be serviced by police, ambulance, fire and rescue and state emergency services in Picton. However, the closest hospital is Campbelltown Hospital which is 25 to 30km to the north.

The entire study area is relatively well serviced by the Rural Fire Service. Refer to Figure 23 - Location of Emergency Services (overleaf).

Justice Services

There are no justice services within the study area, with residents likely to access local and district courts in Campbelltown, Picton, Camden or Liverpool.

Cemeteries

There are no cemeteries within the GMLRIA. The closest cemeteries are located in Picton, Cawdor, Narellan and Campbelltown.

Cultural Facilities and Multi-purpose Community Centres

There are no regional level community centres or libraries in the GMLRIA, with residents likely to access the HJ Daley Central Library located in Campbelltown. The Campbelltown Arts Centre, which includes gallery spaces, workshop rooms, a performance studio and an outdoor amphitheatre, and the Camden Civic Centre also provide existing residents of the study area access to cultural activities.

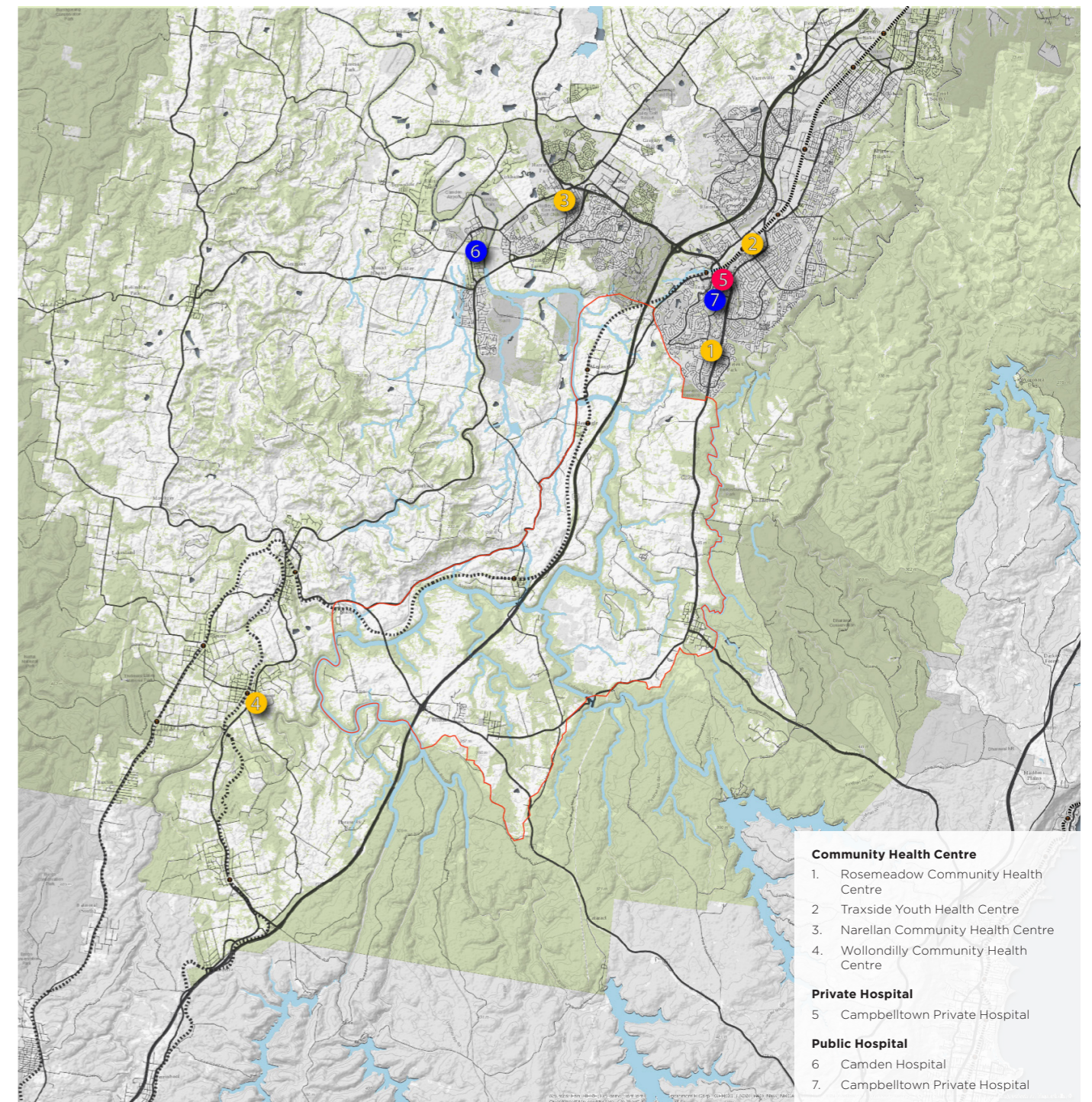
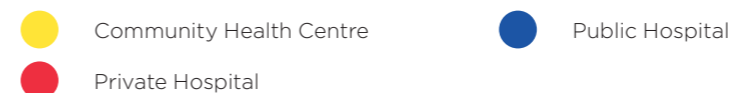


Figure 22 Location of Existing Health Facilities



Existing Values and Constraints

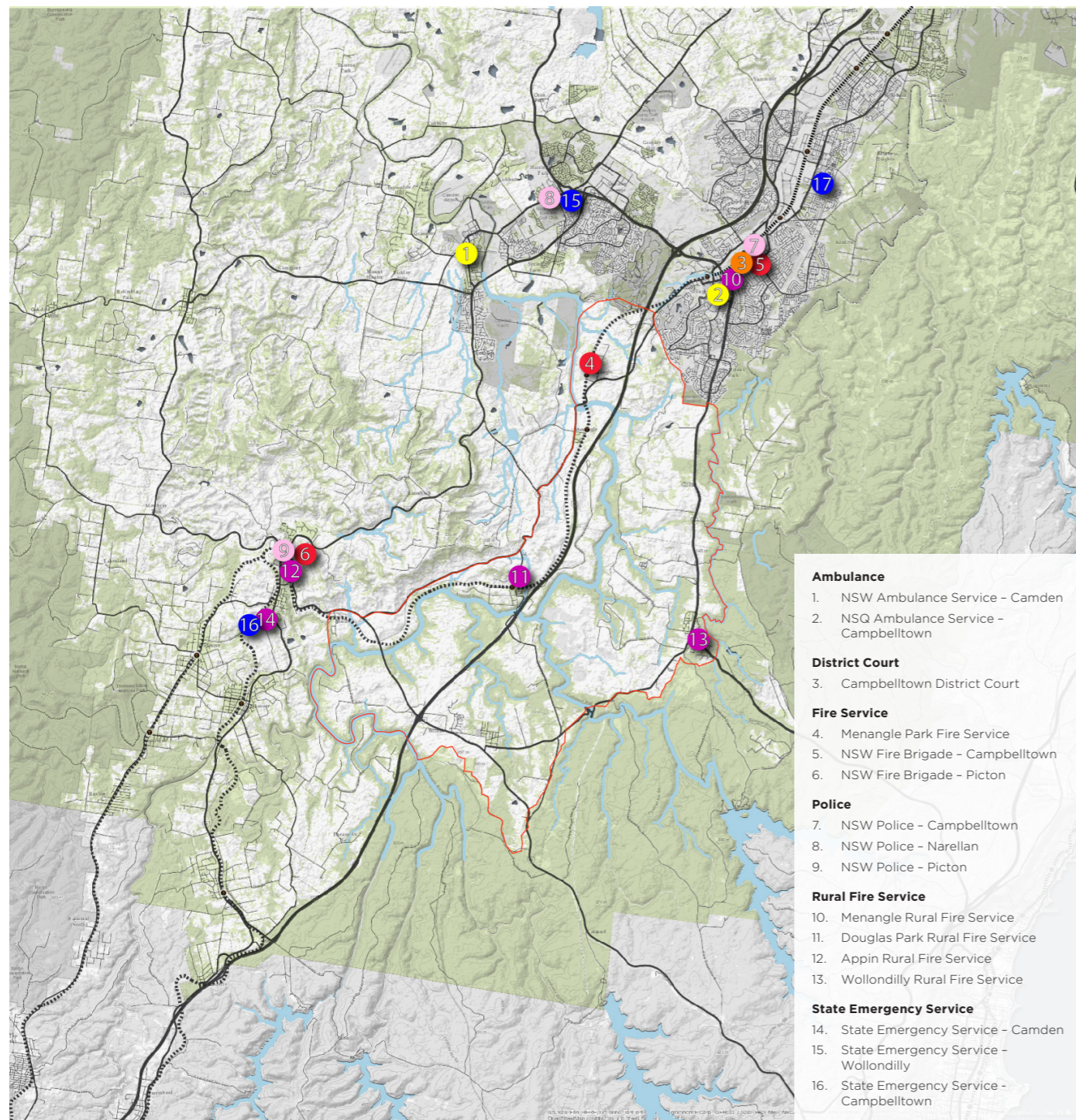


Figure 23 Location of Emergency Services

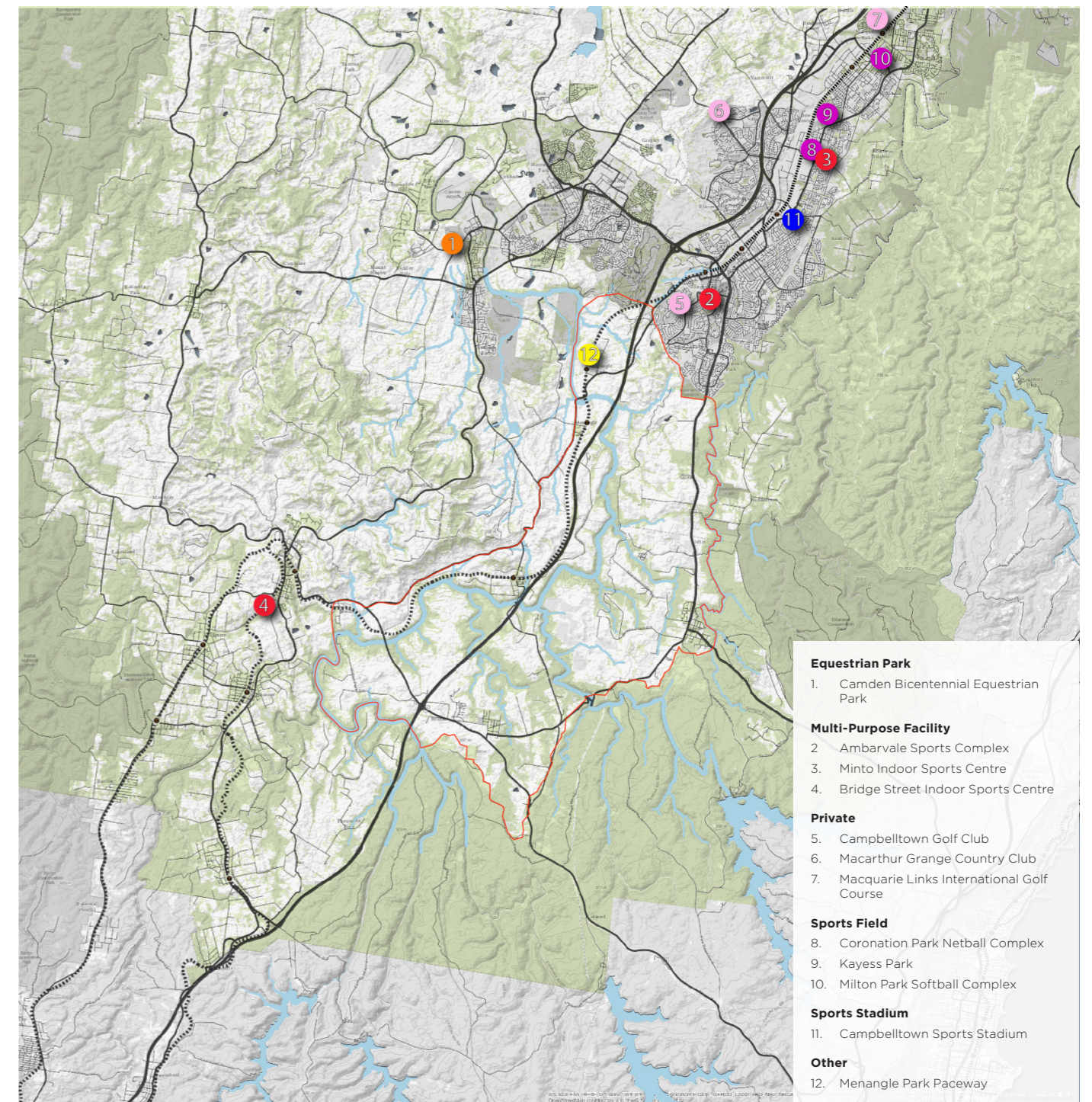


Figure 24 Sport and Recreational Facilities

- Other
- Equestrian Park
- Multi-Purpose Facility
- Private
- Sports Field
- Sports Stadium

- Other
- Equestrian Park
- Multi-Purpose Facility
- Private
- Sports Field
- Sports Stadium

Restricted land uses

Restricted land use areas exist within the study area for the purposes of protecting the water supply area around Lake Cataract reservoir and protecting the water supply channel to Prospect Reservoir (Figure 25).

Relevant restricted land use areas are:

- ▶ Upper Canal – This is a “Controlled Area -no entry”; and
- ▶ Catchment areas up to and including water offtake locations on Cordeaux and Cataract rivers – These are designated as being “Special Areas – no entry”.

In general the public is not permitted to enter either of these classifications of restricted land use. Consent to enter these areas can be sought from WaterNSW. Consent to enter these areas may be granted under specific circumstances and for a specific activity when an application meets all of the mandatory conditions:

- ▶ The activity cannot be completed elsewhere;
- ▶ The activity will benefit WaterNSW’s management of the relevant area or provide a broader public benefit;
- ▶ The activity will not compromise the operation or management of the asset; and
- ▶ The activity will not:
 - Lower the water quality within the storages or catchments;
 - Lower the water quality of surface and ground waters discharging into the structures; and
 - Have a negative impact on the ecological integrity.

Sport and Recreation Facilities

With the exception of Menangle Park Raceway, a harness racing competition facility, there are no regional sport and recreation facilities located in the GMLRIA. While there are a number of local sports fields in the study area, sport and recreation is supported by regional facilities in the surrounding areas (predominantly to the north). The closest facilities to the study area are the Ambarvale Sports Complex (9km north-east of Menangle Park) and the Bridge Street Indoor Centre located in Picton (6km west of Maldon). Figure 24 in the previous page illustrates the locations of existing facilities.

Regional Open Space

Greater Macarthur is within close proximity to existing regional open space (Figure 25). A small portion of the Upper Nepean State Conservation Area and Dharawal Nature Reserve are located within the study area.

The study area is also surrounded by the following open space areas in the wider region:

- ▶ Mt Annan Botanical Gardens;
- ▶ Western Sydney Parklands;
- ▶ Prospect Reservoir Nature Reserve;
- ▶ Nattai National Park;
- ▶ Bargo State Conservation Area; and
- ▶ Burragorang State Recreation Area.

The majority of regional open space in Greater Macarthur are used for passive recreation such as walking and cycling rather than active recreation (e.g. team sports). The identification of major rivers, waterways, river foreshore, creeks and wetlands as a cultural and recreational amenity can further enhance opportunities to improve access to and enjoyment of these places as part of an integrated regional open space network.

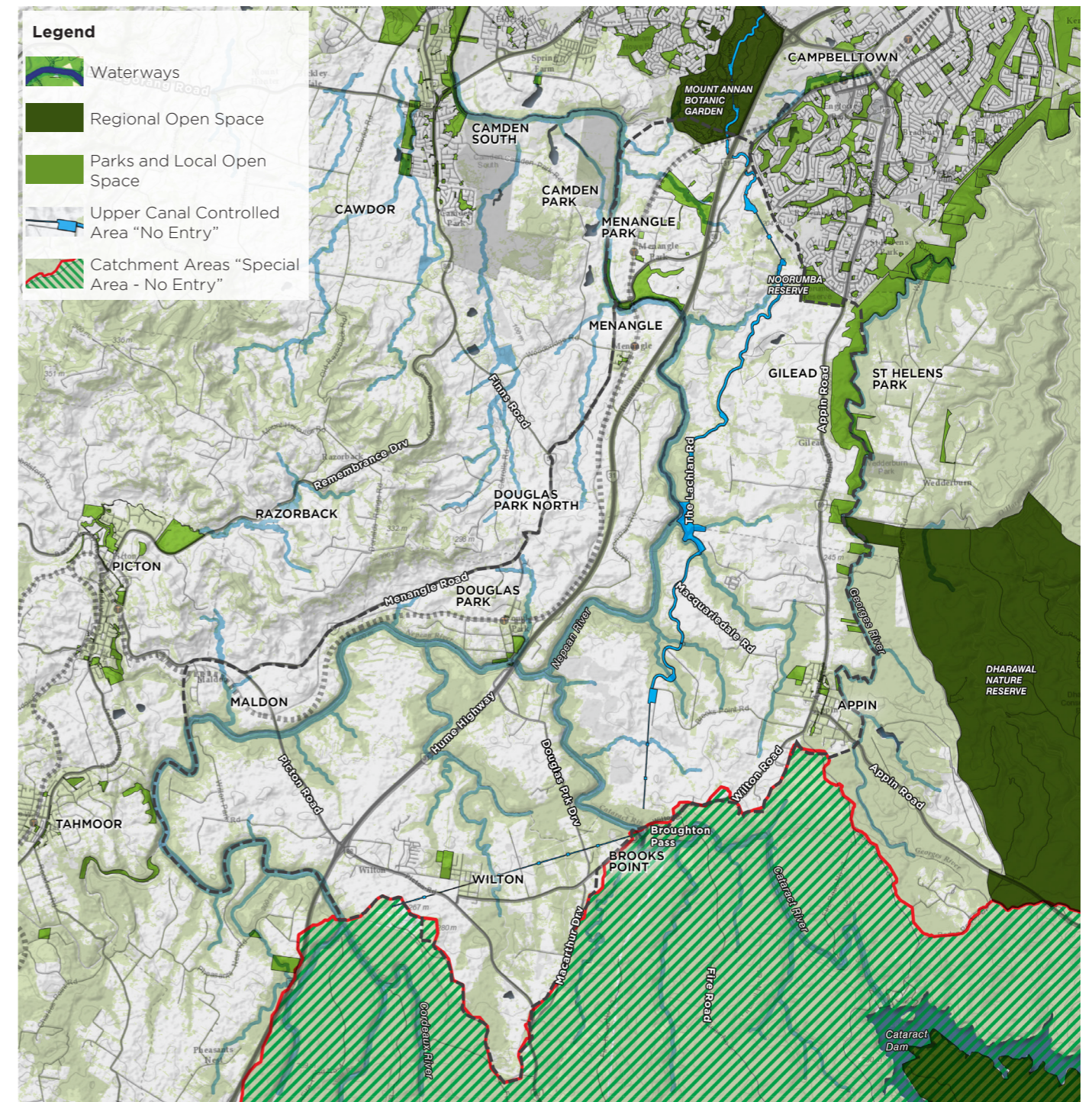


Figure 25 Location of Restricted Land Uses, Existing Local and Regional Open Space

Precinct Analysis

To meet demand over the next 20 years, preliminary investigations into the potential for urban development in Greater Macarthur have identified immediate opportunities to deliver up to 34,700 homes in Menangle Park and Mount Gilead and in a new town at Wilton that will increase capacity to provide new homes for Sydney's growing population.



Explanatory Notes:

► Developable Land

Developable Land represents land that may be suitable for urban development. Development is likely to be predominantly housing. Some of this land may contain environmental and heritage values that constrain the land and will need to be assessed in any future rezoning process. These values may reduce the development potential or may require offsets. Infrastructure provision, utilities servicing requirements and other constraints such as natural hazard susceptibility, the presence of contamination and geotechnical matters may also reduce the area of land available for urban development.

► Employment Land

Locations that have been identified as suitable specifically for employment-generating development; such as manufacturing, warehousing, freight and logistics, service and repair trades, offices, and research and development.

► Service Industry / Large Format Retail

Locations identified as suitable for large, warehouse-style retail buildings typically surrounded by or including a large amount of car parking. Situated on commercial centre periphery or in independent clusters. Typical examples include large furniture retailers, hardware retailers and factory outlets. These locations may also be suitable for industries that sell services direct to the public, such as auto repairs.

Greater Macarthur Vision to 2036

Within *A Plan for Growing Sydney*, Greater Macarthur has been identified as a potential area where urban development could occur to cater for the growing population of Sydney.

A preliminary assessment of the suitability and infrastructure capacity of Greater Macarthur has identified that its northern and southern precincts present opportunities to increase housing supply concurrently with the North West and South West Priority Growth Areas.

The vision for these precincts is illustrated in Figure 26 - Greater Macarthur Vision to 2036 and detailed in the following pages under Priority Precincts.

There are opportunities in other precincts in the study area for future urban development. However, these precincts are not considered suitable within the next 20 years due to the need for infrastructure upgrades. Notwithstanding this, the required transport, utility and social infrastructure to service future populations has been assessed in order to facilitate a holistic approach and ensure that if urban development occurs beyond 2036 the entire area will operate efficiently into the future.

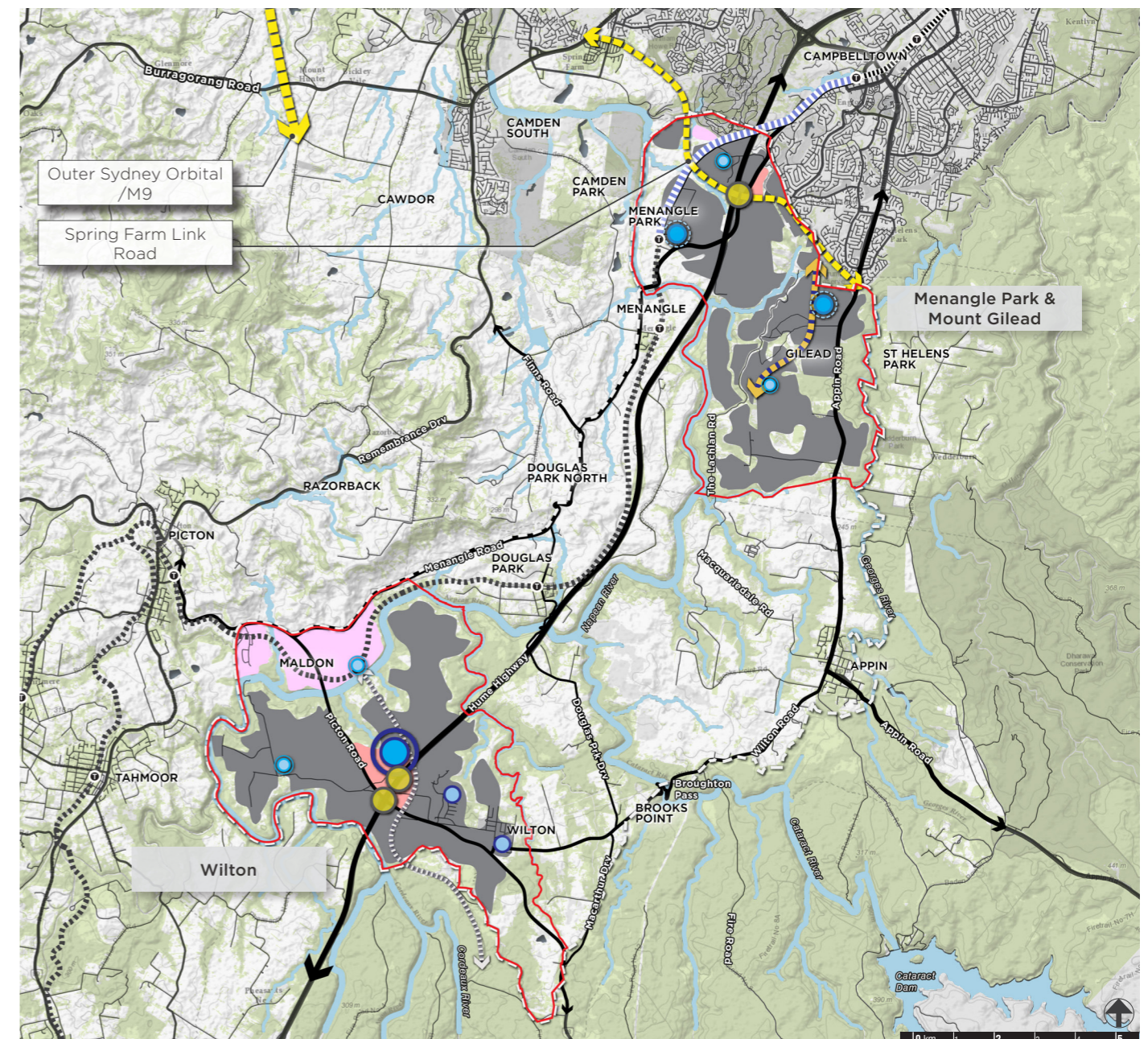


Figure 26 Greater Macarthur Vision to 2036



Retail and employment potential

It is estimated that there is potential for approximately 17,000 jobs across the GMLRIA by 2036. This will largely be generated to service the growing population, in industries such as retail, food services and education. There are also opportunities for strategic industries, such as manufacturing, freight and logistics, particularly in the south of the GMLRIA around Maldon and Wilton.

Employment development will be focused in centres and designated employment areas. A network of town and village centres has been identified to provide residents with convenient access to services and ensure centres remain viable. A major centre is proposed at Wilton Junction, with long-term potential to develop into a strategic centre to serve the wider area. Regional city services will continue to be provided by the Campbelltown-Macarthur regional centre.

The plans for retail and employment uses will be refined and tested as part of the preparation of detailed land use and infrastructure strategies for areas proposed for release.

The development of employment opportunities in the GMLRIA will need to be supported by ongoing work on local economic strategies to attract private investment and promote access to jobs by local residents.

Greater Macarthur Precincts

To inform the land use and infrastructure analysis, a logical precinct division of the study area was established based on utility infrastructure requirements through an assessment of existing and proposed capacity.

These precincts also represent a rational staging of potential growth in the area informed by the aforementioned utility infrastructure and other drivers such as transport infrastructure and social infrastructure requirements.

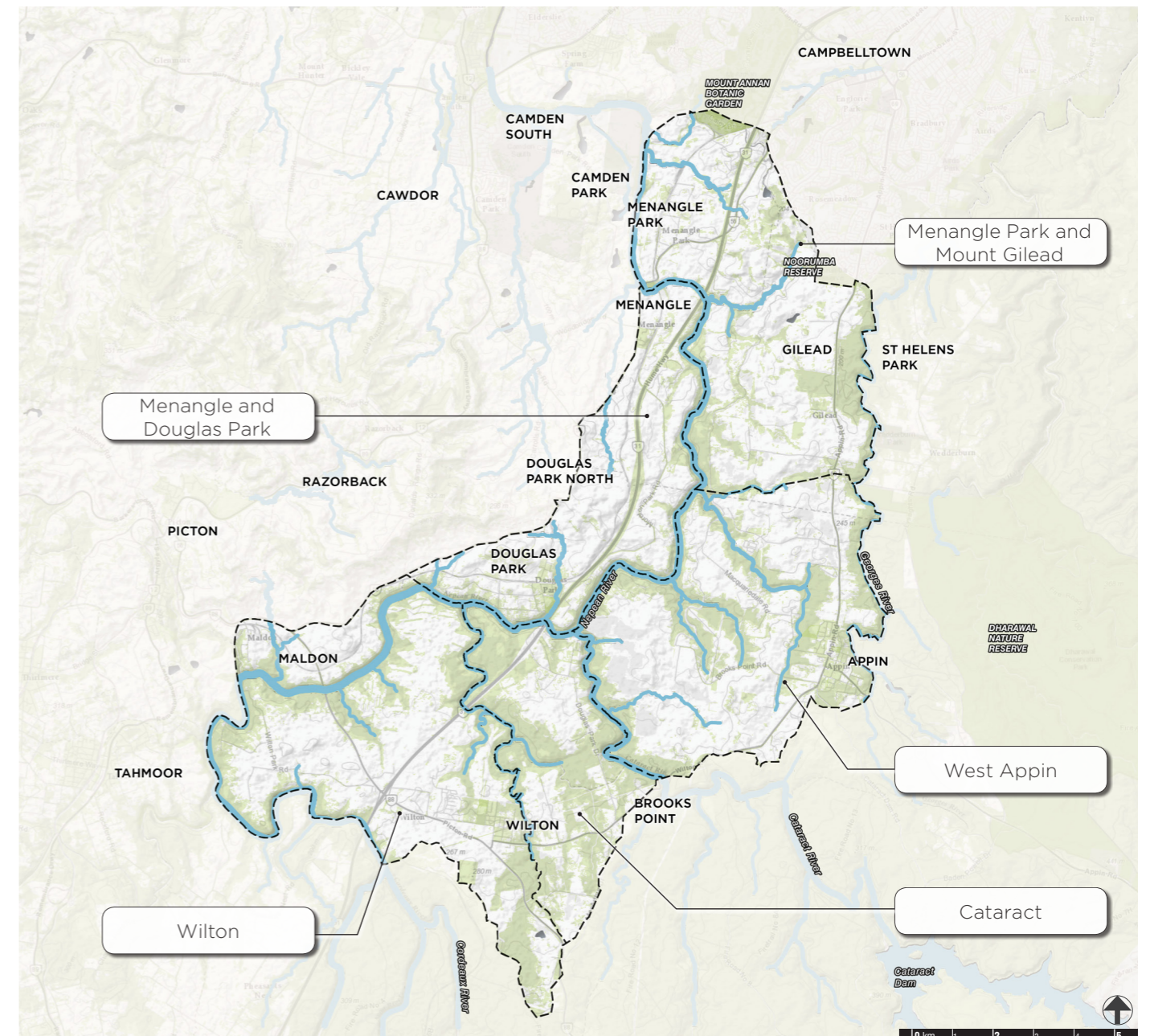
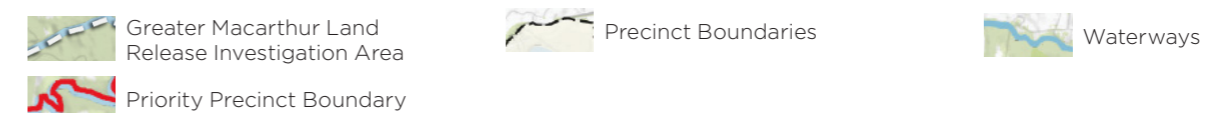


Figure 27 Greater Macarthur Precincts



Precinct Analysis

Priority Precincts



Menangle Park and Mount Gilead

The Menangle Park and Mt Gilead Precinct has an area of approximately 3,601 hectares and is characterised by relatively flat terrain with a flood plain associated with the Nepean River covering the south-west portion of the precinct. The precinct is also characterised by gorges adjoining the Nepean River and its tributaries, and rolling hills in the eastern portion of the precinct.

The preliminary investigations have identified that this precinct has the opportunity to be released for urban development for the following reasons:

- ▶ It is an extension of Sydney's metropolitan urban area south of Campbelltown;
- ▶ Land in this precinct is relatively unencumbered by constraints to development ;
- ▶ Less requirements for substantial transport and utilities infrastructure upgrades than other parts of Greater Macarthur as the precinct could connect to the transport and service infrastructure at Campbelltown;
- ▶ Relatively direct access to the Campbelltown-Macarthur Regional City and other strategic employment areas in Western Sydney;

- ▶ The location of the precinct makes it suitable for a range of employment generating uses, including retail and subregional industries;
- ▶ There is significant private sector interest, with planning proposals at advanced stages; and
- ▶ Sydney Water is progressing servicing strategies for these planning proposals and the proponents have made some in principle commitments to fund and/or deliver other infrastructure projects.

The future land uses in the precinct will predominantly be residential of different densities with commercial uses located within centres. Future residential areas should aim to achieve densities that ensure infrastructure upgrades and land suitable for development are used efficiently.

The precinct is envisaged to contain four centres:

- ▶ Mt Gilead - a local centre with approximately 10,000-20,000m² of employment gross floor area (GFA);
- ▶ Menangle Park - a local centre with approximately 20,000-30,000m² of employment GFA;
- ▶ Gilead - a village centre with approximately 5,000-10,000m² of employment GFA; and
- ▶ Glenlee - a village centre with approximately 5,000m² of employment GFA.

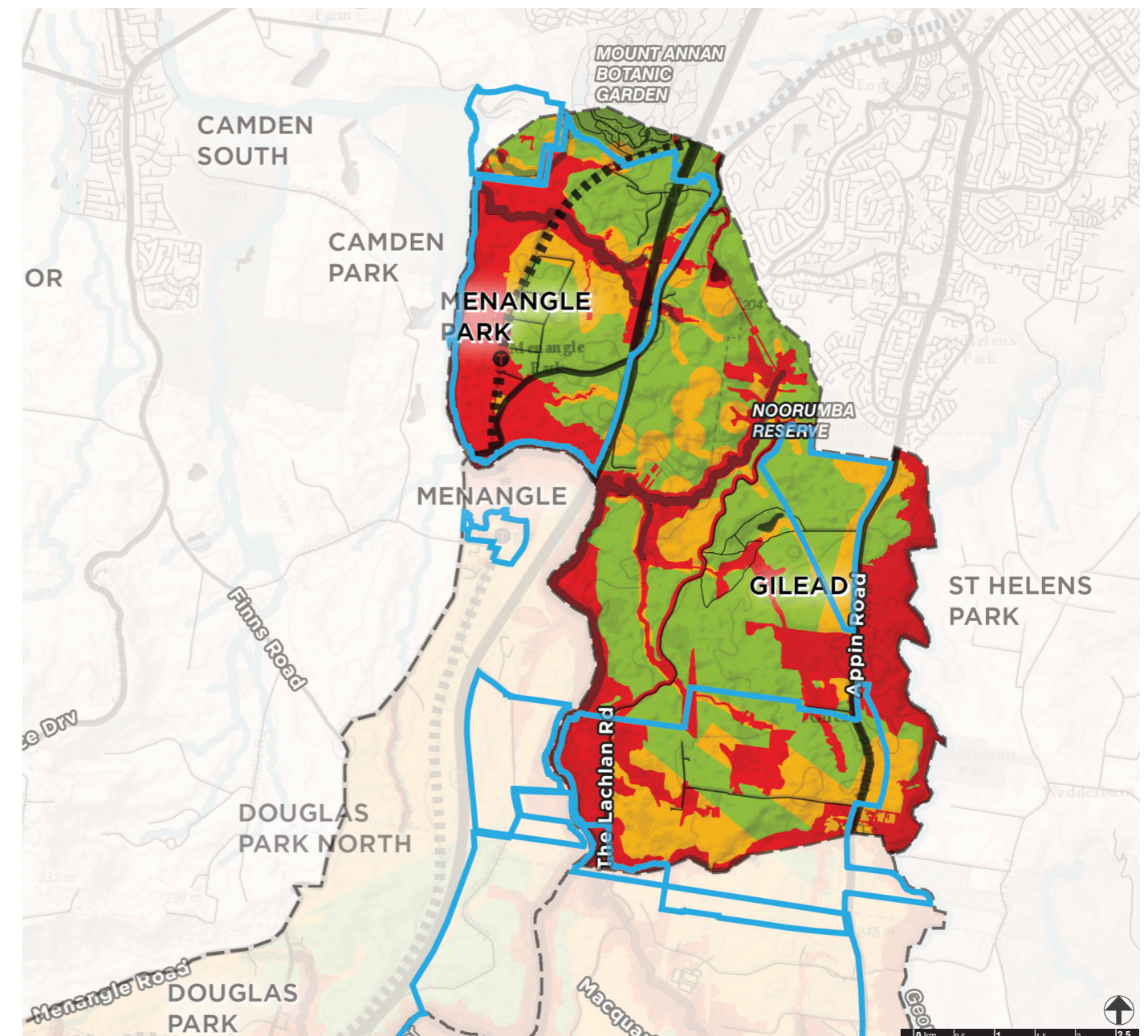


Figure 28 Menangle Park and Mount Gilead Urban Suitability

The suitability for development is divided into three categories:

- Unencumbered land which is suitable for development.
- Land encumbered by constraints which are resolvable with appropriate environmental or staging measures.
- Land which is constrained and not suitable for development.

Legend

- Existing Roads
- Existing Rail and Stop
- Known Proposals

Key Land Use Constraints

- **Heritage Conservation** – the precinct contains a number of existing heritage items and known Aboriginal sites, some of which are located in or adjoin proposed centres. Further investigation will be required to ensure the significance of these heritage items and sites are retained and potentially integrated with future development.
- **Flooding** – the extent of flooding across the precinct, particularly around Menangle Park, will need to be considered with rezoning proposals.
- **Coal Mining** – The southern portion of the site has been, and still is being, used for coal mining. For urban development to occur in these areas, proposals will need to demonstrate that they comply with the relevant rezoning pathway identified in the Greater Macarthur Land Release Preliminary Strategy & Action Plan.
- **Coal Seam Gas Operations** – there are a number of coal seam gas extraction sites within the precinct. Development within close proximity to extraction operations will be required to satisfy relevant rezoning pathway identified in the Greater Macarthur Land Release Preliminary Strategy & Action Plan.
- **Upper Canal** – the Upper Canal, which provides water to Sydney from the four Upper Nepean dams, crosses the eastern portion of the precinct. Future development in this area will need to ensure this system is not adversely impacted upon.
- A detailed **transport network assessment** is required to confirm the extent and density of urban development.

Any future rezoning process would test and refine suitable locations for urban development and appropriate densities. Land identified as being encumbered are required to satisfy the relevant ‘rezoning pathway’ steps identified in the *Greater Macarthur Land Release Preliminary Strategy and Action Plan*.

The areas which fall under the three categories of suitability for development in the precinct are shown in Figure 28 – Menangle Park and Mt Gilead Urban Suitability.

Yield

The precinct has a total of 849 ha of land suitable for residential development, with a further 363 ha which is currently encumbered but could possibly be developed, subject to appropriate ‘rezoning pathway’ steps identified in the *Greater Macarthur Land Release Preliminary Strategy and Action Plan* being undertaken. These combined areas are anticipated to accommodate approximately 18,100 new dwellings.

The precinct has a total of 15 ha of unencumbered land suitable for employment uses, with a further 9 ha of encumbered land.

Known Private Proposals

There are four known private proposes in the precinct:

- Menangle Park Urban Release Area which proposes 3,400 residential lots;
- Part Glenlee which is a proposed rezoning of 110 ha of employment lands (the site is split across Campbelltown and Camden LGAs);
- Mt Gilead which proposes 1,500 residential lots; and
- South Campbelltown which proposes up to 12,000 residential lots.

Infrastructure Requirements

The long term transport infrastructure needed for the precinct is included in Table 7 Menangle Park and Mount Gilead Long Term Transport Infrastructure.

A preliminary infrastructure assessment has identified infrastructure upgrades required to support the precinct’s growth capacity, refer Table 8 Menangle Park and Mount Gilead Long Term Services Infrastructure in the following page.

Infrastructure Funding Mechanism

Infrastructure requirements will need to be delivered through an appropriate mechanism, which could take the form of a Special Infrastructure Contribution (SIC) at no cost to government or a series of planning agreements entered into between the Minister for Planning and the relevant proponents.

Item	Description	Drivers
Spring Farm Link Road	Completion of already-planned four lane arterial road from Spring Farm to Appin Road in southern Rosemeadow including new access ramps to Hume Highway.	<ul style="list-style-type: none"> ► Provide access to new communities in Spring Farm and Menangle and main access to the northern section of Greater Macarthur. ► Improved cross-regional access to Camden. ► Provide relief to the at-capacity B69 corridor in Campbelltown-Macarthur.
Appin Road Upgrade	Upgrade from two lane arterial to four lane arterial between Rosemeadow and the southern extent of the precinct.	<ul style="list-style-type: none"> ► Provide sufficient capacity to accommodate development in northern GMIA.
Menangle Road Upgrade	Upgrade from two lane arterial to four lane arterial between Macarthur and Douglas Park.	<ul style="list-style-type: none"> ► Support growth in Menangle Park, Menangle and Douglas Park.
Hume Highway Upgrade	Upgrade the Hume Highway, between Picton Road and Raby Road.	<ul style="list-style-type: none"> ► Accommodate external impact of GMIA on trunk road network.
Bus Priority Corridor	Construction of Bus Priority Corridor and corridor protection for future extension.	<ul style="list-style-type: none"> ► To support development , and self-contained GMIA trips, from Gilead to south Appin. ► Promote public transport links to Campbelltown-Macarthur. ► Relieve pressure from Appin Road. ► Provide opportunity as a trunk cycle route.
Southern Highlands Rail Line	Investigate the feasibility of the electrification of the Southern Highlands Rail Line to Menangle Park.	<ul style="list-style-type: none"> ► Integrate the study area with Sydney Trains network to provide greater public transport connections to employment areas in the Sydney Metropolitan Area. ► Reduce car dependency and alleviate traffic on road network.

Table 7 Menangle Park and Mount Gilead Long Term Transport Infrastructure

Precinct Analysis

Infrastructure type	Upgrades
Electrical	<ul style="list-style-type: none">▶ Upgrades to Macarthur Bulk Supply Point (BSP).▶ Establishment of zone substations at Gilead and Menangle Park.
Water	<ul style="list-style-type: none">▶ Connection of existing potable water mains within Menangle Park to the Rosemeadow Water Supply Zone (WSZ).▶ A new 5ML water storage tank.
Sewer	<ul style="list-style-type: none">▶ Major works to develop the trunk, branch and reticulation networks.▶ Lead-ins from the Glenfield Water Recycling Plant.▶ Three new pump stations.
Education	<ul style="list-style-type: none">▶ 6 primary schools.▶ 2 High school.▶ Expansion of Mary Brooksbank School.▶ Investigate the potential for a special purpose school (i.e. agricultural).
Emergency Services	<ul style="list-style-type: none">▶ Ambulance standby points.▶ Police shopfront in town centres.
Health	<ul style="list-style-type: none">▶ Primary health care clinic.
Open Space	<ul style="list-style-type: none">▶ District parks.

Table 8 Menangle Park and Mount Gilead Long Term Services Infrastructure

Menangle Park and Mount Gilead Assessment against Action 2.4.2

Issue to be considered	Assessment
The value of land for drinking water supply, agriculture, environmental management, resources, tourism and other purposes.	<ul style="list-style-type: none">▶ Areas of significance and value have been identified and mapped.▶ Any future development is required to avoid impacts to these areas or follow prescribed processes to ensure the land is suitable for urban development.
Constraints to development, including environmental hazards and natural hazards.	<ul style="list-style-type: none">▶ The extent of flooding within the precinct has been mapped and any urban development proposals within these areas will be required to address how the proposal will mitigate impacts to future development and the environment.▶ Significant biodiversity areas have been mapped and proposals will be required to follow prescribed processes (such as bushfire APZs around vegetation) should development occur in these areas.
Private sector interest in developing particular land.	<ul style="list-style-type: none">▶ The precinct contains three known private proposals; Menangle Park and Mt Gilead.▶ The Greater Macarthur Land Release Preliminary Strategy & Action Plan takes these proposals into consideration and provides the relevant framework to ensure they integrate with the broader region.
Proximity of land to current and planned locations of employment.	<ul style="list-style-type: none">▶ The precinct is within close proximity to existing employment areas in Macarthur and Campbelltown and will also create jobs within the proposed centres.▶ Proposed transport infrastructure will improve accessibility to employment areas.
The cost of infrastructure provision including roads, water, sewerage, public transport, schools and health facilities.	<ul style="list-style-type: none">▶ The required utility and social infrastructure to service the precinct is identified above.▶ Given the precinct's location within close proximity to the existing urban sprawl of the Sydney Metropolitan Area, it is positioned to be eligible for urban development within the next 20 years, prior to 2036.
The economic and social cost to communities of having relatively poor access to employment and services.	<ul style="list-style-type: none">▶ The precinct will provide additional employment opportunities and social infrastructure to the area. The required employment areas and social infrastructure has been calculated to service the future population.▶ Transport infrastructure projects will also provide greater accessibility to other employment areas and social infrastructure facilities outside of the precinct.

Table 9 Menangle Park and Mount Gilead Assessment against Action 2.4.2



Wilton

The Wilton Precinct has an area of approximately 4,175 hectares (ha) and is bounded by the Menangle Road, Allens Creek to the east, the Sydney Water Catchment Authority Special Area to the south and the Nepean River to the west.

The majority of the precinct is characterised by rolling hills with gorges adjoining the Nepean River and its tributaries. While a significant area of the precinct is cleared for agricultural and residential purposes, areas surrounding waterways are densely vegetated.

The preliminary investigations have identified that this precinct has the opportunity to be released for urban development for the following reasons:

- There is considerable developer interest and local authority support for bringing forward a new town at Wilton;
- Wilton Junction has been identified as a highly suitable location for a range of employment generating uses. Development of the new town will be proponent-led, with required infrastructure provided at no additional cost to Government;
- The new town would help meet Wollondilly Shire's growth needs, and would establish a specialised employment centre. The centre would have the potential to be the largest employment provider in the study area; and

- Maldon has been identified as a prime location to attract strategic industrial uses due to its existing industrial clusters, access to rail and the Hume Highway.

The future land uses in the precinct will be a mix of residential, commercial and industrial uses. Future residential areas should aim to achieve densities that ensure infrastructure upgrades and land suitable for development are used efficiently.

The precinct is envisaged to have five centres:

- Wilton Major Centre – a major centre with approximately 100,000-150,000m² of retail and employment GFA;
- West Wilton – a village centre with approximately 5,000m² of retail GFA;
- Bingara Gorge – an existing village centre with approximately 5,000m² of retail GFA; and
- Maldon – a village centre with approximately 3,000m² of retail GFA.
- Wilton Village - existing village centre at corner of Wilton Road / Camden Street.

Key Land Use Constraints

- **Mining** – a significant portion of the precinct has approval for coal mining over the next 15 to 30 years. For development to occur in this area, it would need to occur after mining operations have ceased or proposals will need to demonstrate that they comply with the relevant rezoning pathway steps.
- **Heritage Conservation** – the precinct contains a number of existing heritage items and known Aboriginal sites, some of which are located in or adjoin proposed centres. Further investigation will be required to ensure the significance of these heritage items and sites are retained.
- **Upper Canal** – the Upper Canal, which provides water to Sydney from the four Upper Nepean dams crosses through the precinct. Future development in this area will need to ensure this system is not adversely impacted upon.

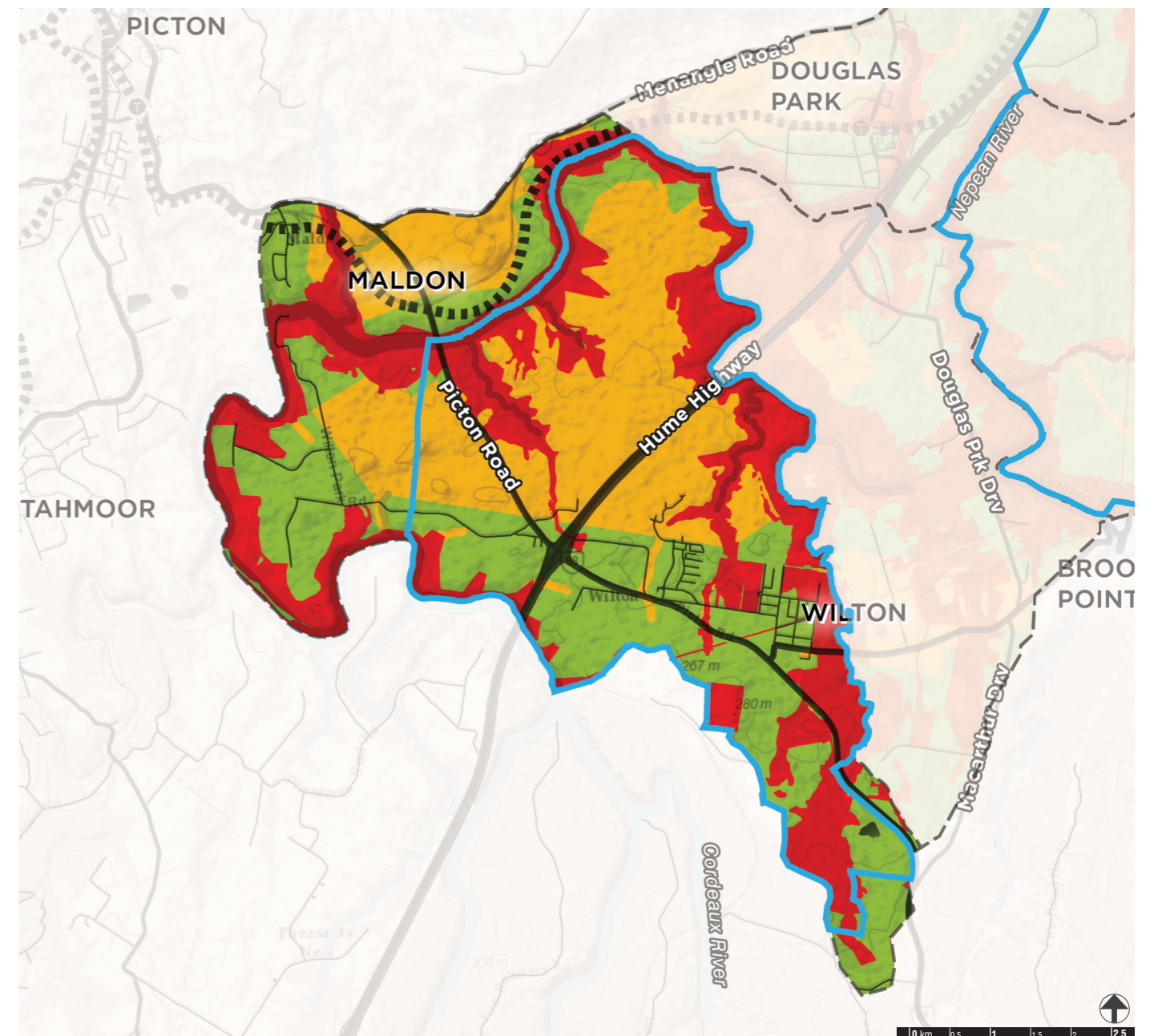


Figure 29 Wilton Urban Suitability

The suitability for development is divided into three categories:

- Unencumbered land which is suitable for development.
- Land encumbered by constraints which are resolvable with appropriate environmental or staging measures.
- Land which is constrained and not suitable for development.

Legend

- Existing Roads
- Existing Rail and Stop
- Known Proposals

Precinct Analysis

Any future rezoning process would test and refine suitable locations for urban development and appropriate densities. Land identified as being encumbered are required to satisfy the relevant ‘rezoning pathway’ steps identified in the *Greater Macarthur Land Release Preliminary Strategy and Action Plan*.

The areas which fall under the three categories of suitability for development in the precinct are shown in Figure 29 – Wilton Urban Suitability,

Yield

The precinct has a total of 554 ha of land suitable for residential development, with a further 552 ha which is currently encumbered but could possibly be developed, subject to appropriate ‘rezoning pathway’ steps identified in the *Greater Macarthur Land Release Preliminary Strategy and Action Plan* being undertaken. These combined areas are anticipated to accommodate approximately 16,600 new dwellings.

The precinct has a total of 131 ha of unencumbered land suitable for employment uses, with a further 231 ha of encumbered land.

Known Private Proposals

There is one known private proposal in the precinct, Wilton Junction Study Area, which proposes up to 12,000 new residential lots and 181ha of employment land.

Infrastructure Requirements

The long term transport infrastructure needed for the precinct is included in Table 10 Wilton Long Term Transport Infrastructure.

A preliminary infrastructure assessment has identified infrastructure upgrades required to support the precinct’s growth capacity. Refer to Table 11 Wilton Long Term Services Infrastructure.

Infrastructure Funding Mechanism

Infrastructure requirements will need to be delivered through an appropriate mechanism, which could take the form of a Special Infrastructure Contribution (SIC) at no cost to government or a series of planning agreements entered into between the Minister for Planning and the relevant proponents.

Item	Description	Drivers
Hume Highway/ Picton Road Interchange	Upgrade existing Picton Road/Hume Highway interchange and provide new northern access ramps.	<ul style="list-style-type: none">▶ Support development proposed in the Wilton Junction and Wilton areas.▶ Provide relief to the Picton Road interchange to the south.
Picton Road Upgrade	Upgrade from two lane arterial to four lane arterial between Pembroke Parade and Almond Street, and from the Hume Highway to Picton.	<ul style="list-style-type: none">▶ Support growth in Wilton Junction, Maldon, Picton and Wilton.▶ Enable freight movement between the Hume Highway and Picton Road to the east.
Hume Highway Upgrade	Upgrade the Hume Highway, between Picton Road and Raby Road.	<ul style="list-style-type: none">▶ Accommodate external impact of GMIA on trunk road network.

Table 10 Wilton Long Term Transport Infrastructure

Infrastructure type	Upgrades
Electrical	<ul style="list-style-type: none">▶ Zone Substation at Bingara Gorge.▶ Upgrade of Zone Substation in Maldon.
Water	<ul style="list-style-type: none">▶ Two new 5ML water storage facilities.▶ Duplication of water main to the Picton Reservoir.
Sewer	<ul style="list-style-type: none">▶ Seven new pumping stations.
Education	<ul style="list-style-type: none">▶ 7 primary schools.▶ 2 high schools.▶ Specialty school (i.e. agricultural).
Emergency Services	<ul style="list-style-type: none">▶ Ambulance hub.▶ Police station.
Health	<ul style="list-style-type: none">▶ Integrated health facility.
Cultural	<ul style="list-style-type: none">▶ Cultural facility.
Open Space	<ul style="list-style-type: none">▶ Regional park.▶ District park.

Table 11 Wilton Long Term Services Infrastructure

Wilton Assessment against Action 2.4.2

Issue to be considered	Assessment
The value of land for drinking water supply, agriculture, environmental management, resources, tourism and other purposes.	<ul style="list-style-type: none"> ▶ Areas of significance and value have been identified and mapped. ▶ Any future development is required to avoid impacts to these areas or follow prescribed processes to ensure the land is suitable for urban development.
Constraints to development, including environmental hazards and natural hazards.	<ul style="list-style-type: none"> ▶ Significant biodiversity areas have been mapped and proposals will be required to follow prescribed processes (such as bushfire APZs around vegetation) should development occur in these areas.
Private sector interest in developing particular land.	<ul style="list-style-type: none"> ▶ The precinct contains one known private proposals; Wilton Junction Study Area. ▶ The Greater Macarthur Land Release Preliminary Strategy & Action Plan has taken this proposal into consideration and provides the relevant framework to ensure that it will integrate with the broader region.
Proximity of land to current and planned locations of employment.	<ul style="list-style-type: none"> ▶ The precinct contains existing employment areas in Wilton and Maldon where the future development of the precinct will increase employment opportunities to residents in the wider region. ▶ Proposed transport infrastructure will improve accessibility to other employment areas within the GMLRIA, Sydney Metro Area and the Wollongong region.
The cost of infrastructure provision including roads, water, sewerage, public transport, schools and health facilities.	<ul style="list-style-type: none"> ▶ The required utility and social infrastructure to service the precinct is identified above. ▶ The precinct has been sequenced to be one of the first precincts within the study area for urban development with development considered likely within the next 20 years, prior to 2036.
The economic and social cost to communities of having relatively poor access to employment and services.	<ul style="list-style-type: none"> ▶ The precinct will provide additional employment opportunities and social infrastructure to the area. The required employment areas and social infrastructure has been calculated to service the future population of the precinct and broader study area. ▶ Transport infrastructure projects will also provide greater accessibility to employment areas and social infrastructure facilities inside and outside of the precinct.

Table 12 Wilton Assessment against Action 2.4.2

Precinct Analysis

Other Precincts



The remaining precincts within the study area are not required to meet Sydney's 2036 housing demand targets. These precincts have not been identified for release prior to 2036 as they have significant environmental constraints and/or the costs of infrastructure to service growth would be extremely high and the level of required investment is considered not cost-effective.

Potential strategic opportunities, beyond 2036, will depend on the location and timing of delivery of the Outer Sydney Orbital and expansion of the freight rail network through the Maldon-Dombarton Rail Line. The rural setting of Appin, Menangle and Douglas Parks Villages should be protected, however, small scale development that can be supported by the existing infrastructure and transport network could be supported.

West Appin

The West Appin Precinct is located in the south-eastern portion of the GMLRIA and has an area of approximately 3889 hectares. The precinct is bounded by the Menangle and Mt Gilead precinct boundary to the north, Georges River to the east, Wilton Road to the south and the Nepean River and Cataract River to the west.

The majority of the precinct is characterised by rolling hills with gorges adjoining the Nepean River and its tributaries. While a significant area of the precinct is cleared for agricultural and residential purposes, areas surrounding waterways and to the east of the Georges River are densely vegetated.

If strategic opportunities were pursued beyond 2036, suitable land uses in this precinct would be a mix of residential and commercial uses including new centres at West Appin and North Appin providing employment opportunities. The identified significant vegetation around waterways will be conserved.

The precinct could contain three centres:

- ▶ West Appin – a local centre with approximately 30,000-50,000m² of employment GFA. The centre could be one of the largest employment providers in the future;
- ▶ North Appin – a village centre with approximately 5,000-10,000m² of employment GFA; and
- ▶ Appin – an existing village centre which has been identified to retain its current character.

Key Land Use Constraints

- ▶ **Mining** – a significant portion of the precinct has previously been subject to coal mining, with an additional area planned for mining in the next 15 to 30 years. For development to occur in this area, it would need to occur after mining operations have ceased or proposals will need to demonstrate that they comply with the relevant rezoning pathway steps.

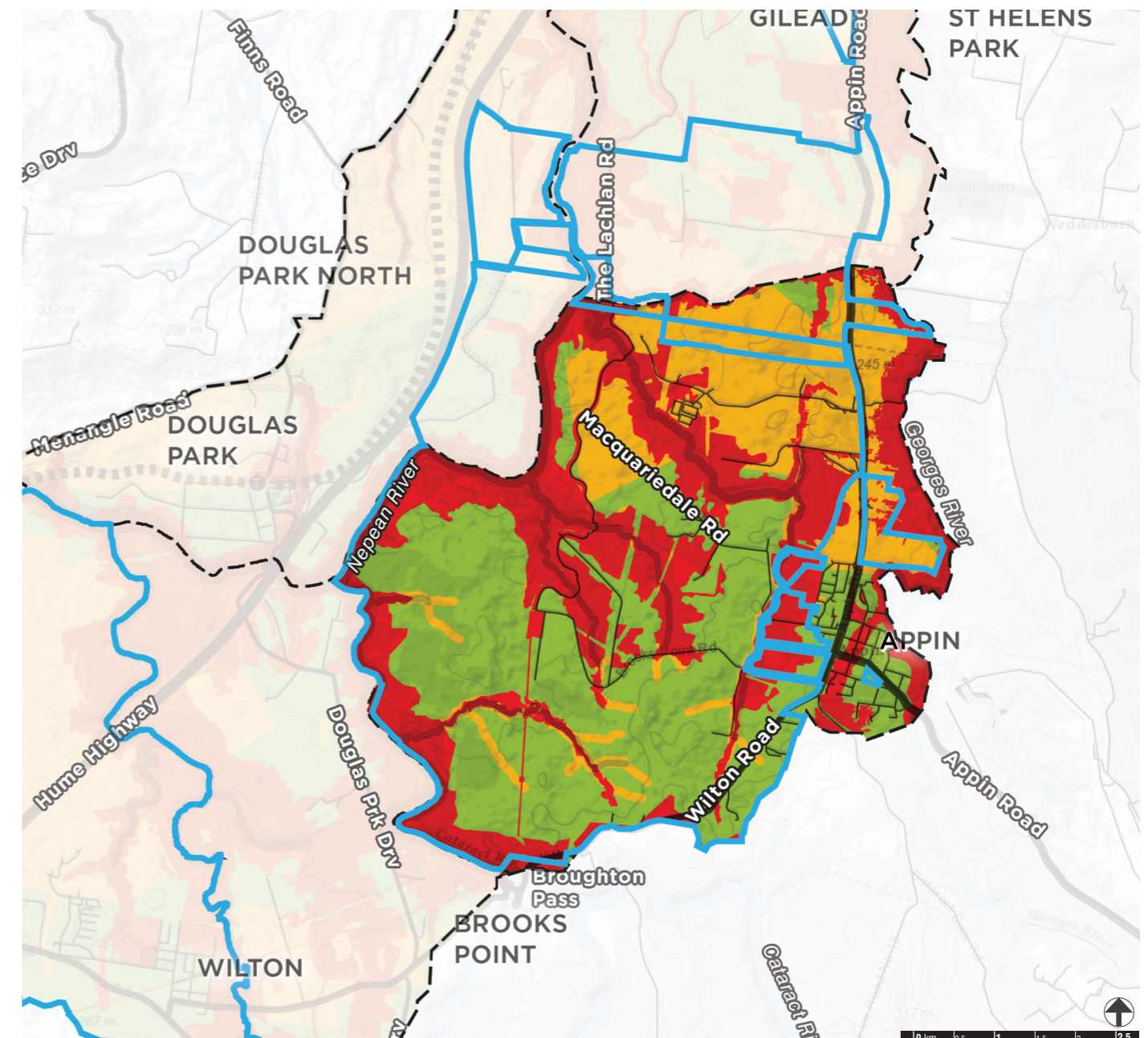


Figure 30 West Appin Urban Suitability

The suitability for development is divided into three categories:

- Unencumbered land which is suitable for development.
- Land encumbered by constraints which are resolvable with appropriate environmental or staging measures.
- Land which is constrained and not suitable for development.

Legend

- Existing Roads
- Existing Rail and Stop
- Known Proposals

- **Heritage conservation** – the precinct contains a number of existing heritage items and known Aboriginal sites, some of which are located in or adjoin the West Appin centre. Further investigation would be required to ensure the significance of these heritage items and sites are retained.
- **Upper Canal** – the Upper Canal, which provides water to Sydney from the four Upper Nepean dams, crosses the western portion of the precinct. Future development in this area would need to ensure this system is not adversely impacted upon.
- **Poultry Cluster** – there is a significant cluster of poultry shed located within the precinct around the North Appin centre. Proposals to develop within this area would be required to demonstrate that they comply with the relevant urban suitability processes.

The areas which fall under the three categories of suitability for development in the precinct are shown in Figure 30 – West Appin Urban Suitability

Yield

The precinct has a total of 874 ha of land suitable for future residential development, with a further 415 ha which is currently encumbered but could possibly be developed, subject to appropriate 'rezoning pathway' steps identified in the *Greater Macarthur Land Release Preliminary Strategy and Action Plan* being undertaken. If strategic opportunities were pursued beyond 2036, these combined areas are anticipated to accommodate approximately 19,300 new dwellings.

The precinct has a total of 14 ha of unencumbered land suitable for future employment uses.

Known Private Proposals

There are four known private proposals in the precinct:

- West Appin Study Area (including three individual planning proposals) proposes up to 18,000 new residential lots, 99,000m² of commercial GFA and 372.6ha of industrial area;
- Brooks Point Road, Appin – proposes 340 new residential lots;
- Macquariedale Road, Appin – proposed 340 new residential lots and
- Appin East - proposes 750 new residential lots.

Infrastructure Requirements

The long term transport infrastructure needed for the precinct is included in Table 13 West Appin Long Term Transport Infrastructure.

A preliminary infrastructure assessment has identified infrastructure upgrades required to support the precinct's growth capacity. Refer to Table 14 West Appin Long Term Services Infrastructure.

Infrastructure Funding Mechanism

Infrastructure requirements will need to be delivered through an appropriate mechanism, which could take the form of a Special Infrastructure Contribution (SIC) at no cost to government or a series of planning agreements entered into between the Minister for Planning and the relevant proponents.

Infrastructure type	Upgrades
Electrical	<ul style="list-style-type: none"> ► Upgrade of the Douglas Park Switching Station. ► Establishment of a Douglas Park Zone Substation. ► Upgrade to the Nepean Transmission Station.
Water	<ul style="list-style-type: none"> ► The location of the Macarthur Water Filtration Plant provides the opportunity to connect to water infrastructure (subject to capacity of the Filtration Plant). The existing pumping station would be required to be upgraded to service the precinct.
Sewer	<ul style="list-style-type: none"> ► A new 152kW pumping station. ► A new 202kW pumping station.
Education	<ul style="list-style-type: none"> ► 4 primary schools. ► 2 high schools. ► School for specific purpose either in this precinct or the Gilead Precinct.
Emergency Services	<ul style="list-style-type: none"> ► Ambulance standby point. ► Police station in West Appin.
Health	<ul style="list-style-type: none"> ► Regional integrated primary health care clinic in West Appin.
Cultural	<ul style="list-style-type: none"> ► Cultural facility.
Open Space	<ul style="list-style-type: none"> ► Regional park. ► District park.

Table 13 West Appin Long Term Transport Infrastructure

Item	Description	Drivers
Bus Priority Corridor	New Bus Priority Corridor west of Appin Road.	<ul style="list-style-type: none"> ► Alleviate traffic on Appin Road and serve as the main north-south bus corridor.
Macquariedale Road/Finns Road Upgrade	New four land arterial road in place of existing local road. Includes connection from Appin to Menangle Road, including full interchange with the Hume Highway and connection with Moreton Park Road.	<ul style="list-style-type: none"> ► Serve as the main east-west connection through the central area of Greater Macarthur. ► Provide improved access to the Hume Motorway and relieve traffic loadings on parallel north-south corridors (Appin Road and Menangle Road). ► Improve cross-regional connectivity between Appin and Camden. ► Improve access to Douglas Park and new centre to the north.
Appin Bypass	Upgrade from two land arterial to four land arterial between Rosemeadow and Appin.	<ul style="list-style-type: none"> ► Provide sufficient capacity to accommodate development in northern Greater Macarthur.
High Speed Rail (HSR)	The HSR passenger networking, connecting Melbourne to Brisbane through Sydney, Canberra and other regional centres, may pass through the study area. The current preferred alignment for the HSR line is indicated to pass through the precinct between the Nepean River and the proposed Bus Priority Corridor.	<ul style="list-style-type: none"> ► The close proximity of the preferred alignment to the West Appin centre provides an opportunity for an additional HSR station in the centre to improve the connectivity of residents in the Wollongong region to Sydney, Canberra and beyond.

Table 14 West Appin Long Term Services Infrastructure

Precinct Analysis

West Appin Assessment against Action 2.4.2

Issue to be considered	Assessment
The value of land for drinking water supply, agriculture, environmental management, resources, tourism and other purposes.	<ul style="list-style-type: none">▶ Areas of significance and value have been identified and mapped.▶ Any development would be required to avoid impacts to these areas or follow relevant pathway steps to ensure the land is suitable for urban development.
Constraints to development, including environmental hazards and natural hazards.	<ul style="list-style-type: none">▶ Significant biodiversity areas have been mapped and proposals will be required to follow prescribed processes (such as bushfire APZs around vegetation) should development occur in these areas.
Private sector interest in developing particular land.	<ul style="list-style-type: none">▶ The precinct contains four known private proposals: West Appin Study Area*, Brooks Point Road, Macquariedale Road and Appin East.▶ The investigation has taken these proposals into consideration. The preliminary strategy identifies the possibility for only small scale expansion of Appin Village, in line with existing post-Gateway planning proposals.
Proximity of land to current and planned locations of employment.	<ul style="list-style-type: none">▶ The development of town and village centres in the precinct would be required to provide employment opportunities and social infrastructure.▶ Significant transport infrastructure projects would be required to provide greater accessibility to employment areas and social infrastructure facilities outside of the precinct, including Campbelltown-Macarthur Regional City and the Broader Western Sydney Employment Area.

Issue to be considered	Assessment
The cost of infrastructure provision including roads, water, sewerage, public transport, schools and health facilities.	<ul style="list-style-type: none">▶ The investigation has identified utility and social infrastructure that would be needed to service growth in the precinct.▶ Large scale land release would trigger the need for a new east-west connection to the Hume Highway, with a potential alignment along Macquariedale Road, including a new bridge over the Nepean River and an interchange at the Hume Highway.▶ The cost of these works would be significant and the level of investment required is considered not currently cost effective.▶ Strategic transport infrastructure currently under investigation, such as the Outer Sydney Orbital and upgraded Hume Highway interchange, could make land release cost effective in the longer-term.▶ The rural setting of Appin Village would be protected, with only small scale expansion taking place, in line with existing post-Gateway planning proposals.
The economic and social cost to communities of having relatively poor access to employment and services.	<ul style="list-style-type: none">▶ The investigation has identified social infrastructure needed to service an increased population in the precinct.▶ The development of town and village centres in the precinct would be required to provide employment opportunities and social infrastructure.▶ Significant transport infrastructure projects would be required to provide greater accessibility to employment areas and social infrastructure facilities outside of the precinct, including Campbelltown-Macarthur Regional City and the Broader Western Sydney Employment Area.

*It should also be noted that on 19 May 2015 Wollondilly Shire Council resolved to not support the inclusion or consideration of any land west of the Nepean River as part of the high level infrastructure investigation currently being undertaken for a potential West Appin Masterplan.

Table 15 West Appin Assessment against Action 2.4.2



Menangle and Douglas Park

The Menangle and Douglas Park Precinct is located in the western portion of the GMLRIA and has an area of approximately 2,378 hectares. The precinct is bounded by the Nepean River to the north, east and south and Menangle Road to the west.

The majority of the precinct is characterised by rolling hills with gorges adjoining the Nepean River and its tributaries. The topography to the west of the precinct is considerably more variable associated with the Razorback Range. While the majority of the precinct is cleared for agricultural and residential purposes, areas surrounding waterways are fairly densely vegetated.

If strategic opportunities were pursued beyond 2036, suitable land uses in this precinct would be a mix of residential and commercial uses with a new centre at Douglas Park North suitable for strategic industrial uses. The identified significant vegetation around waterways will be conserved.

The precinct could contain three centres:

- ▶ Menangle – a village centre with approximately 5,000m² of retail GFA;
- ▶ Douglas Park North – a specialised employment centre with approximately 10,000-20,000m² of employment uses GFA; and
- ▶ Douglas Park – a local centre with approximately 10,000m² of other office and retail GFA.

Key Land Use Constraints

- ▶ **Mining** – the majority of the precinct has either been previously subject to coal mining or is planned for mining for the next 7 years. For development to occur in this area, it would need to occur after mining operations have ceased or proposals will need to demonstrate that they comply with the relevant rezoning pathway steps.
- ▶ **Heritage Conservation** – the precinct contains a number of existing heritage items and known Aboriginal sites. Further investigation would be required to ensure the significance of these heritage items and sites are retained with the heritage character of Menangle being retained.
- ▶ **Poultry Cluster** – there is a significant cluster of poultry shed located within the precinct around the Douglas Park North centre. Proposals to develop within this area would be required to demonstrate that they comply with the relevant urban suitability processes.

The areas which fall under the three categories of suitability for development in the precinct are shown in Figure 31 – Menangle and Douglas Park Urban Suitability.

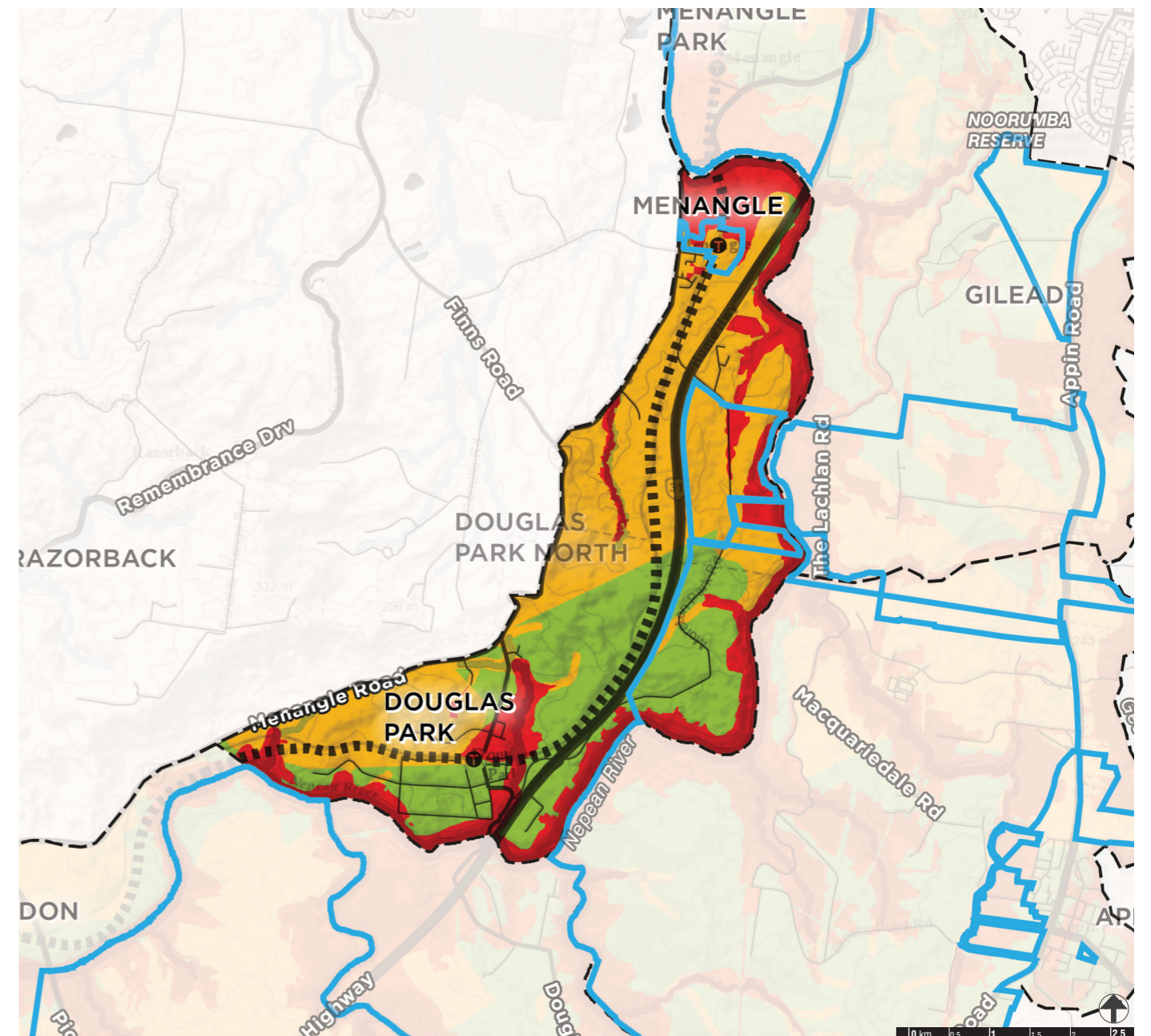


Figure 31 Menangle and Douglas Park Urban Suitability

The suitability for development is divided into three categories:

- Unencumbered land which is suitable for development.
- Land encumbered by constraints which are resolvable with appropriate environmental or staging measures.
- Land which is constrained and not suitable for development.

Legend

- Existing Roads
- Existing Rail and Stop
- Known Proposals

Precinct Analysis

Yield

The precinct has a total of 133 ha of land suitable for future residential development, with a further 346 ha which is currently encumbered but could possibly be developed, subject to appropriate 'rezoning pathway' steps identified in the *Greater Macarthur Land Release Preliminary Strategy and Action Plan* being undertaken. These combined areas are anticipated to accommodate approximately 7,200 new dwellings.

The precinct has a total of 226 ha of unencumbered land suitable for future employment uses and a further 270 ha of encumbered land.

Known Private Proposals

There are three known private proposals in the precinct:

- ▶ Moreton Park Road, Menangle (refused by JRPP) – proposed up to 340 new residential lots, and 240ha of employment area;
- ▶ Station Street, Menangle – proposes 350 new residential lots; and
- ▶ West Appin Study Area (including three individual planning proposals) proposes up to 18,000 new residential lots, 99,000m² of commercial GFA and 372.6ha of industrial area.

Infrastructure Requirements

The long term transport infrastructure needed for the precinct is included Table 16 Menangle and Douglas Park Long Term Transport Infrastructure.

A preliminary infrastructure assessment has identified infrastructure upgrades required to support the precinct's growth capacity. Refer to Table 17 Menangle and Douglas Park Long Term Services Infrastructure.

Infrastructure Funding Mechanism

Infrastructure requirements will need to be delivered through an appropriate mechanism, which could take the form of a Special Infrastructure Contribution (SIC) at no cost to government or a series of planning agreements entered into between the Minister for Planning and the relevant proponents.

Item	Description	Drivers
Southern Highlands Rail Line	Electrification of the Southern Highlands Rail Line between Menangle and Maldon.	<ul style="list-style-type: none">▶ Provide greater public transport connections from the study area to employment areas in the Sydney Metropolitan Area▶ Reduce car dependency and alleviate traffic on road network.
Macquariedale Road/ Finns Road Upgrade	New four land arterial road in place of existing local road. Includes connection from Appin to Menangle Road, including full interchange with the Hume Highway and connection with Moreton Park Road.	<ul style="list-style-type: none">▶ Serve as the main east-west connection through the central area of Greater Macarthur▶ Provide improved access to the Hume Motorway and relieve traffic loadings on parallel north-south corridors (Appin Road and Menangle Road)▶ Improve cross-regional connectivity between Appin and Camden▶ Improve access to Douglas Park and new centre to the north

Table 16 Menangle and Douglas Park Long Term Transport Infrastructure

Infrastructure type	Upgrades
Electrical	<ul style="list-style-type: none">▶ Establishment of a Morton Park Zone Substation.
Water	<ul style="list-style-type: none">▶ A new 6ML water storage tank located near Douglas Park North.
Sewer	<ul style="list-style-type: none">▶ A new 37kW pumping station.▶ A new 232kW pumping station.
Education	<ul style="list-style-type: none">▶ Primary school in Menangle.▶ High school in Douglas Park.
Emergency Services	<ul style="list-style-type: none">▶ Ambulance standby point.▶ Police shopfront in town centre.
Open Space	<ul style="list-style-type: none">▶ Regional park.▶ District park.

Table 17 Menangle and Douglas Park Long Term Services Infrastructure

Menangle and Douglas Park Assessment against Action 2.4.2

Issue to be considered	Assessment
The value of land for drinking water supply, agriculture, environmental management, resources, tourism and other purposes.	<ul style="list-style-type: none"> ▶ Areas of significance and value have been identified and mapped. ▶ Any development would be required to avoid impacts to these areas or follow relevant processes pathway steps to ensure the land is suitable for urban development.
Constraints to development, including environmental hazards and natural hazards.	<ul style="list-style-type: none"> ▶ Significant biodiversity areas have been mapped and proposals will be required to follow prescribed processes (such as bushfire APZs around vegetation) should development occur in these areas.
Private sector interest in developing particular land.	<ul style="list-style-type: none"> ▶ The precinct contains three known private proposals: West Appin Study Area and Station Street, Menangle, Moreton Park Road Menangle Employment Lands*. ▶ The investigation has taken these proposals into consideration. The preliminary strategy identifies the possibility for small scale growth at Menangle Village in line with the existing post gateway planning proposals.
Proximity of land to current and planned locations of employment.	<ul style="list-style-type: none"> ▶ The development of town and village centres in the precinct would be required to provide employment opportunities and social infrastructure. There is potential for a specialised employment area at Douglas Park North. ▶ Significant transport infrastructure projects would provide greater accessibility to employment areas and social infrastructure facilities within and outside of the precinct, including Campbelltown-Macarthur Regional City and the Broader Western Sydney Employment Area.

Issue to be considered	Assessment
The cost of infrastructure provision including roads, water, sewerage, public transport, schools and health facilities.	<ul style="list-style-type: none"> ▶ The investigation has identified utility and social infrastructure that would be needed to service growth in the precinct. ▶ Large scale land release would trigger the need for a new east-west connection to the Hume Highway with a potential alignment along Macquariedale Road, including a new bridge over the Nepean River and an interchange at the Hume Highway. ▶ The cost of these works would be significant and the level of investment required is not currently cost effective. ▶ Strategic transport infrastructure currently under investigation, such as the Outer Sydney Orbital and upgraded Hume Highway, could make land release cost effective in the longer-term. ▶ Small scale development in Menangle Village in line with the existing post-Gateway planning proposal can be supported by the existing infrastructure and transport network.
The economic and social cost to communities of having relatively poor access to employment and services.	<ul style="list-style-type: none"> ▶ The investigation has identified social infrastructure needed to service an increased population in the precinct. ▶ The development of town and village centres and a specialised employment centre in the precinct would be required to provide employment opportunities and social infrastructure. ▶ Significant transport infrastructure projects would be required to provide greater accessibility to employment areas and social infrastructure facilities outside of the precinct, including Campbelltown-Macarthur Regional City and the Broader Western Sydney Employment Area.

* It should also be noted that on 19 May 2015 Wollondilly Shire Council resolved to not support the inclusion or consideration of any land west of the Nepean River – including land in the planning proposal for employment lands at Moreton Park Road, Menangle – as part of the high level infrastructure investigation currently being undertaken for a potential West Appin Masterplan.

Table 18 Menangle and Douglas Park Assessment against Action 2.4.2

Precinct Analysis

Cataract



The Cataract Precinct is located in the south-eastern portion of the GMLRIA and has an area of approximately 1,898 hectares. The precinct is bounded by the Nepean River to the north, Cataract River to the east, Macarthur Drive and Picton Road to the south and Allens Creek to the west.

The majority of the precinct is characterised by relatively flat terrain with some rolling hills and gorges adjoining the Nepean River and its tributaries. While there are pockets of cleared land associated with agricultural uses, a large portion of the precinct is covered in dense vegetation.

The area identified as being suitable for urban development is isolated by waterways and significant vegetation. As the required utility and road infrastructure to service the area would make development unviable, the precinct will retain the existing rural land uses.

Key Land Use Constraints

- ▶ **Utility Infrastructure Servicing** – the developable area within the precinct is isolated by surrounding waterways and significant vegetation. Accordingly, servicing the precinct is considered costly and unviable.
- ▶ **Mining** – a portion of the precinct is planned for mining in the next 15 to 30 years. If urban development was to occur in this area, it would need to occur after mining operations have ceased or proposals will need to demonstrate that they comply with the relevant rezoning pathway steps.
- ▶ **Heritage Conservation** – the precinct contains a number of existing heritage items and known Aboriginal sites. Further investigation would be required for any future development within the vicinity of these sites to ensure their heritage significance is retained.
- ▶ **Upper Canal** – the Upper Canal, which provides water to Sydney from the four Upper Nepean dams, crosses the northern portion of the precinct. Any future development in this area would need to ensure this system is not adversely impacted upon.

The areas which fall under the three categories of suitability for development in the precinct are shown in Figure 32 – Cataract Urban Suitability.

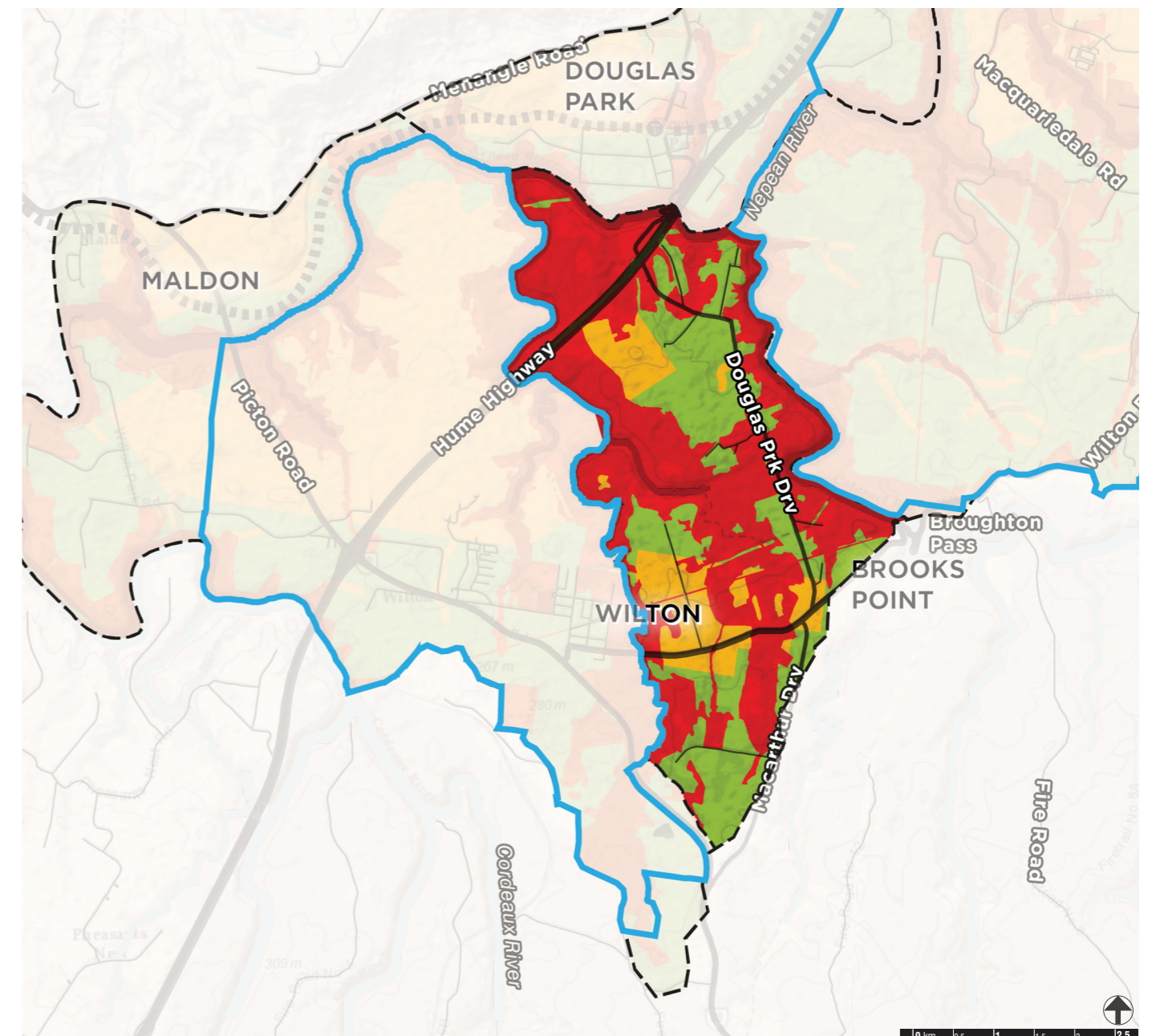


Figure 32 Cataract Urban Suitability

The suitability for development is divided into three categories:

- Unencumbered land which is suitable for development.
- Land encumbered by constraints which are resolvable with appropriate environmental or staging measures.
- Land which is constrained and not suitable for development.

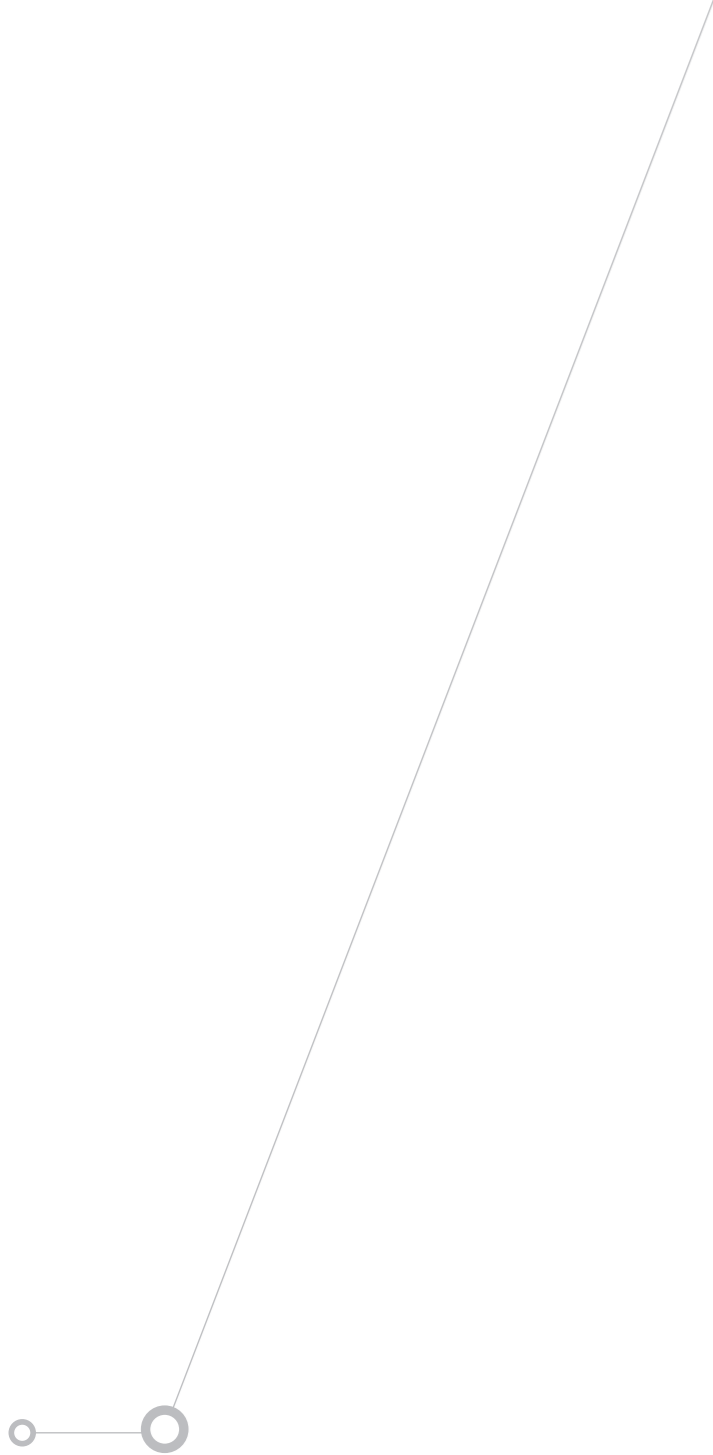
Legend

- Existing Roads
- Existing Rail and Stop
- Known Proposals

Cataract Assessment against Action 2.4.2

Issue to be considered	Assessment
The value of land for drinking water supply, agriculture, environmental management, resources, tourism and other purposes.	<ul style="list-style-type: none">▶ Areas of significance and value have been identified and mapped.▶ Significant waterway and vegetation values exist within the precinct. Accordingly urban development potential is not supported.
Constraints to development, including environmental hazards and natural hazards.	<ul style="list-style-type: none">▶ Significant biodiversity areas have been mapped and proposals will be required to follow prescribed processes (such as bushfire APZs around vegetation) should development occur in these areas.
Private sector interest in developing particular land.	<ul style="list-style-type: none">▶ The precinct does not contain any known private proposals.
Proximity of land to current and planned locations of employment.	<ul style="list-style-type: none">▶ The precinct does not contain any significant employment areas with agricultural uses being the predominant use.▶ The area is not considered suitable for urban development given the cost of utility infrastructure to service the area.
The cost of infrastructure provision including roads, water, sewerage, public transport, schools and health facilities.	<ul style="list-style-type: none">▶ The area identified as being suitable for urban development is isolated by waterways, vegetation and topography. Accordingly, servicing the precinct is considered costly and unviable relative to potential yield.
The economic and social cost to communities of having relatively poor access to employment and services.	<ul style="list-style-type: none">▶ The cost of utility infrastructure to service the area has resulted in the precinct being considered unsuitable for urban development.

Table 19 Cataract Assessment against Action 2.4.2



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