MacroPlan Australia
Setting New Standards

Moama North West | Master Plan

FINAL REPORT

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PREPARED FOR MURRAY SHIRE

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1 Introduction

1.1 Purpose of the Master Plan

The Moama North West Master Plan is a strategic framework for the future growth and development of this identified growth area. The plan has been prepared on behalf of Murray Shire by MacroPlan Australia in conjunction with Traffix Group.

The study area encompasses approximately 243 hectares of land and has historically been used for agricultural purpose; viticulture, poultry farming, dryland cropping and cattle grazing. The site is characterised by flat terrain with some low-lying areas subject to flooding. The area was identified as Future Residential by the Strategic Land Use Plan 2006-2030.

The Moama North West Master Plan (the Plan) identifies a range of strategic land use issues affecting the area, which include landholder needs and aspirations. In addition the Plan articulates the preferred pattern of development for the Moama North West Precinct.

1.2 How will this plan be used?

The Master Plan is a strategic guide used by the Murray Shire in order to provide strategic direction for the future use and development of the area. The plan will ensure that the Moama North West Precinct develops in a coordinated and orderly manner during the next 25 – 30 years. It is expected that Council will use the Moama North West Master Plan in considering zoning requests, Local Environmental Plans (LEP) and when assessing future needs for infrastructure and services.

Importantly, the Master Plan seeks to provide greater certainty for residents and landholders on future planning and development of the study area.

2 Methodology

In preparing the Plan, MacroPlan has applied a 4 staged methodology as outlined below.

STAGE 1: Project Inception, Scope and Visioning

To initiate the communication process, define project objectives and formalise project governance and co-ordination processes.

- Undertake a review of previous studies.
- Site and Context Analysis.
- Workshop with Key Council Officers.
- Site Inspection

STAGE 2: Review and Identification

To understand and identify the site constraints and opportunities and landholder aspirations.

- Undertake a review of the site constraints and opportunities.
- Consultation with key land owners.
- Collation of consultation outcomes.

STAGE 3: Design and development of draft Master Plan

To prepare a comprehensive Master Plan for the Moama North West area.

- Review key outcomes of the plan.
- Prepare supporting information, plans and maps.
- Prepare Draft Moama North West Master Plan
- Formal exhibition to the community and relevant stakeholders.

STAGE 4: Review and Completion

To review and make changes to the plan giving consideration to the comments received during formal exhibition.

- Consider and review comments received during exhibition.
- Review the Draft Moama North West Master Plan.
- Prepare final Moama North West Master Plan.

3 Study Area Context

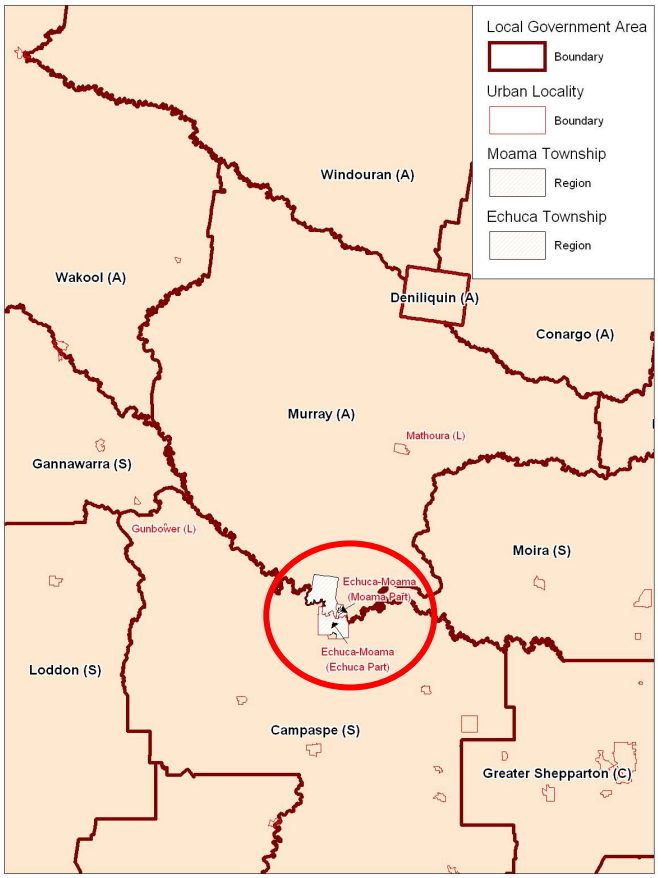
3.1 Murray Shire

The Murray Shire is located between the Murray and Edward Rivers in southern New South Wales. It has an area of 4,345 square kilometres. The major settlements within the Shire are Moama and Mathoura with smaller established settlements in Bunnaloo, Womboota, Picnic Point and Cummeragunja. The Deep Creek marina development west of Moama is emerging as a new small settlement in the Shire.

The Murray LGA extends approximately 90km from east to west and 80km north to south. The overall character of the Shire is rural with a strong tourism emphasis in Moama and along the Murray River. The Shire's terrain is predominantly flat and typical of that within the Murray Valley region. The Moama Township is located at the southern end of the Murray Shire and with the Murray River forming the southern boundary.

As illustrated in Figure 1, the Murray Shire borders four NSW local government areas and three in Victoria. The Township of Echuca in Victoria represents a major rural centre and as such the Township exerts significant economic and social influence over Moama due to the availability of higher order services and employment.

Figure 1. Location Map



Source: MacroPlan Australia, 2006

3.2 Study Area

Identified as a future residential growth area within the Murray Shire Strategic Land Use Plan (SLUP) 2006-2030, the *"Moama North West"* Study Area is located to the north-west of the Moama Township (Figure 2). Martin Road forms the northern boundary with existing residential developments along Perricoota Road to the south. The Study Area is approximately 243 hectares in area. Historically the Study Area has been used for agricultural purposes and the majority of the land is used for viticulture, poultry farming, dryland cropping and cattle grazing. Surrounding land uses include recreational, residential, agricultural and industrial.

The topographical features of the Study Area include a flat terrain with low-lying areas subject to flooding through the middle of the site. A number of clusters of significant vegetation, 'Grey Box' exist throughout the site, particularly near low-lying areas and existing road-sides.

Figure 2. Study Area

Source: Traffix Group 2007

4 Planning Context

4.1 State Directions

Section 5 of the Environmental Planning and Assessment Act 1979 outlines the objectives as:

(a) to encourage:

(i) proper management, development and conservation of natural and manmade resources for the purpose of promoting the social and economic welfare of the community and a better environment,

(ii) the promotion and coordination of the orderly and economic use and development of land,

(iii) the protection, provision and coordination of communication and utility services,

(iv) the provision of land for public purposes,

(v) the provision and coordination of community services and facilities; and

(vi) ecologically sustainable development, and

(b) to promote the sharing of responsibility for environmental planning between different levels of Government in the State; and

(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.

4.2 State Environmental Planning Policy (SEPP)

The purpose of the State Environmental Planning Policies (SEPPs) is to inform planning authorities and key stakeholders of those policies of State level significance. The Minister for Planning prepares and exhibits the SEPPs for public comment prior to a SEPP becoming a legal document.

The following SEPPs are considered as relevant to the future direction of the study area:

SEPP No. 1 – Development Standards

The basis for SEPP 1 is to make development standards more flexible. It ensures that local government councils have an ability to approve a development proposal which does not comply with a set standard where it can be demonstrated that compliance is unreasonable or unnecessary. A development application needs to be submitted providing a written justification. If Council is satisfied that the application is well founded, and that it still achieves the objectives of the planning controls, consent may be given.

SEPP No. 19 – Bushland in Urban Area

This policy establishes the protection and preservation of bushland within certain urban areas, recognised for its natural heritage value or for recreational, educational and scientific purposes. The policy is designed to protect bushland in public open space zones and reservations, and to ensure that bush preservation is given a high priority when local environmental plans for urban development are prepared. Development of the study area will need to take into consideration any bushland that needs to be protected and preserved. The Master Plan has been developed to ensure that significant vegetation is protected and areas for re-vegetation have been provided.

SEPP No. 44 – Koala Habitat Protection

This policy encourages the conservation and management of natural vegetation areas that provide habitat for koalas to ensure permanent free-living populations will be maintained over their present area. The policy applies to 107 local government areas throughout NSW. Local councils cannot approve development in an area affected by the policy without an investigation of core koala habitat. The policy provides the state-wide approach needed to enable appropriate development to continue, while ensuring there is ongoing protection of koalas and their habitat. Any development of land within the study area will need carry out an assessment in accordance with the requirements of SEPP 44.

SEPP No. 55 – Remediation of Land

SEPP 55 establishes that a local government council must not grant consent to a development without having considered whether or not the land is contaminated. If it is found to be contaminated, the council must be satisfied that it can be remediated to a level in line with the sensitivity of the proposed use. With respect to the study area, current farming and agriculture uses are likely to have resulted in the need for the remediation of the land. Therefore, a report detailing any site contamination needs to be undertaken for the subject site.

SEPP No. 65 – Design Quality of Residential Flat Development

This policy aims to improve the design quality of residential flat development. The policy aims to encourage more sustainable development, achieve better built form and aesthetics of buildings, improve the appearance and safety of streetscapes and public spaces, and to minimize the use of non-renewal energy. The Residential Flat Design Code is the main tool used to encourage better design of residential flat buildings, having regard to the location, bulk and scale, appearance and amenity of buildings.

In relation to the study area, this policy applies to medium density residential development. The Master Plan promotes sustainable development through lot design and water sensitive urban design techniques.

SEPP (Seniors Living) 2004

This policy encourages the development of high quality accommodation for our ageing population and for people with disabilities. In addition, it encourages housing that is in keeping with the local neighbourhood. Any potential aged housing development in the study area will need to take into consideration the requirements of SEPP (Seniors Living) 2004. The Master Plan encourages the development of housing which accommodates retirement living.

SEPP (Building Sustainability Index: BASIX) 2004

The Building Sustainability Index (BASIX) was introduced by the NSW Government to deliver equitable water and greenhouse gas reductions across the state. It sets water and energy reduction targets for new houses and unit developments. The policy seeks to ensure that dwellings are designed to use less potable water and reduce greenhouse gas emissions. The policy ensures a consistent and successful implementation of BASIX in NSW by overriding competing provisions in other environmental planning instruments and development control plans.

BASIX incorporates regional variations such as soil type, climate, rainfall and evaporation rates. Consequently, the Energy target varies according to building type and location. The energy target represents a percentage reduction in greenhouse gas emissions. Under the BASIX Energy Target Zone Map, development in the study area must achieve an energy target of:

- 40 for a single dwelling, town house or villa,
- 35 for a 3 storey residential building,

- 30 for a 4-5 storey residential building, and
- 20 for buildings 6 stories or greater.

A 40% water target must also be achieved for any development within the study area.

The Master Plan promotes sustainable development through lot design and water sensitive urban design techniques.

Draft SEPP No. 66 – Integration of Land Use and Transport

This policy provides guiding principles for development that aim to ensure that urban structure, building form, land use distribution, development design, street layout and lot orientation actively achieve the following planning objectives:

- Improving accessibility to housing, employment and services by walking, cycling, and public transport,
- Improving the choice of transport and reducing dependence solely on cars for travel purposes,
- Moderating growth in the demand for travel and the distances travelled, especially by car,
- Supporting the efficient and viable operation of public transport services,
- Providing for the efficient movement of freight.

SEPP (Infrastructure) 2007

The Draft Infrastructure SEPP includes general planning provisions to:

- Identify classes of infrastructure development that can be approved by public infrastructure proponents, rather than through a formal development consent process, if the development does not significantly affect the environment (Schedule 1);
- Consolidate planning provisions relating to project-specific infrastructure into the one SEPP (Schedule 2);
- Allow certain development within the area of operations of ports corporations at commercial ports if the development complies with particular standards and conditions (Schedule 4);
- Create more flexibility about where new infrastructure such as schools, police stations and health care facilities can be located without having to amend a council's LEP to create a 'special use' zone (Part 3);
- Identify additional uses permitted on land currently zoned for a 'special use' or government land, subject to the issuing of a compatibility statement by the Director General of the Department of Planning (Clause 19);
- Require State agencies constructing infrastructure to consult councils when a new infrastructure development is likely to affect existing local infrastructure or services (Clause 13).
- Requires consideration of the size and capacity of a classified road when traffic generating-development is proposed (Clause 104).

Note: The Infrastructure SEPP does not identify developments to which Part 3A applies as these are listed in the Major Projects SEPP.

4.3 Regional Environmental Plans

Regional Environmental Plans (REPs) cover issues such as urban growth, commercial centres, extractive industries, recreational needs, rural lands, and heritage and conservation. REPs are made under the Environmental Planning and Assessment Act 1979 and provide the framework for detailed local planning by councils.

The following REP is considered relevant to the preparation of the Moama North West Mater Plan:

Murray REP No. 2 - Riverine Land

This regional plan ensures the river and its floodplain are able to support a range of productive land uses. The plan coordinates planning along the Murray River and the implementation of planning-related aspects of the Murray Darling Basin Commission strategies. It simplifies the consultation process between agencies and councils established in REP No. 1. It also promotes consistency between NSW and Victoria planning in relation to the river and its floodplain.

4.4 Local Environmental Policy (LEP)

The Murray Local Environmental Policy (LEP) 1989 sets the regional context for the Murray Shire and comprises a number of *Zone Provisions* and *Special Provisions*. The primary aim of the Murray LEP 1989 is *"to encourage the proper management, development and conservation of natural and man-made resources…".*

Land in the Moama Town Centre is zoned *2(v) – Village or Urban* which enables the city to develop as a centre for commerce, housing and industry. Development within the 2(v) Zone is divided in five types; residential, commercial, industrial, special uses and open space. The objective of this zone is as follows:

The objective of this zone is to promote development in existing towns and villages in a manner which is compatible with their urban function.

The majority of the Study Area is currently zoned 1(a) General Rural which facilitates *agriculture (other than ancillary dwellings, animal boarding or training establishments and intensive livestock keeping establishments); forestry (other than ancillary dwellings and pine plantations)* without development consent. The objective of the 1(a) General Rural Zone is as follows:

"The objectives of this zone are to promote the proper management and utilisation of resources by:

(a) protecting, enhancing and conserving:

(i) agricultural land in a manner which sustains its efficient and effective agricultural production potential,

(ii) soil stability by controlling and locating development in accordance with soil capability,

(iii) forests of existing and potential commercial value for timber production,

(iv) valuable deposits of minerals, coal, petroleum and extractive materials by controlling the location of development for other purposes in order to ensure the efficient extraction of those deposits,

(v) trees and other vegetation in environmentally sensitive areas where the conservation of the vegetation is significant to scenic amenity, recreation or natural wildlife habitat or is likely to control land degradation,

(vi) water resources for use in the public interest,

(vii) areas of significance for nature conservation, including areas with rare plants, wetlands and significant habitat, and

(viii) places and buildings of archaeological or heritage significance, including the protection of aboriginal relics and places,

(b) preventing the unjustified development of prime crop and pasture land for purposes other than agriculture,

(c) facilitating farm adjustments,

(d) minimising the cost to the community of:

(i) fragmented and isolated development of rural land, and

(ii) providing, extending and maintaining public amenities and services, and

(e) providing land for future urban development for rural-residential development and for development for other non-agricultural purposes, in accordance with the need for that development."

A small parcel of land in the Study Area is currently zoned 2(v1) Low Density Residential which facilitates *Agriculture (other than ancillary dwellings and buildings, animal boarding or training establishments, intensive livestock keeping establishments, horticulture and viticulture)* without a development consent. The objective of the 2(v1) Low Density Residential Zone is as follows:

"The objective of this zone is to provide land for low density residential development, being development:

(a) That provides a choice of residential environments, and

(b) That is in proximity to an urban area, and

(c) That takes advantage of available urban infrastructure and services, and

(d) That provides a high level of residential amenity, and

(e) That does not compromise or conflict with existing and future urban development or adjoining development, and"

(f) That is undertaken in a planned and controlled environment.

Land in the south-east corner of the Study Area is currently zoned 1(d) Future (Urban) which facilitates *Agriculture (other than animal boarding or training establishments and intensive livestock breeding establishments) with out development consent.* The objective of the 1(d) Future (Urban) Zone is as follows:

The objectives of this zone are to identify land suitable for future urban use and to prevent premature development which constrains future land use options.

5 Key Background Documents

5.1 Moama Strategic Land Use Plan 2006-2030

The Moama Strategic Land Use Plan (Moama SLUP) expresses Council's vision for land use planning:

> *"..to ensure that the Shire's natural environment is carefully managed and that its natural and built assets are protected from inappropriate rural and urban development that would prejudice the agricultural, heritage and urban attributes of the Shire".*

The purpose of the Moama SLUP is to provide certainty and guidance for future development of the shire for the next 20-30 years. The Moama SLUP is applicable to the entire Murray Shire and will form the basis for the development of a new Local Environmental Plan (LEP). The Moama SLUP details the land use pattern for Moama including delineating those areas for future residential (standard, low density and tourist), commercial and industrial.

The Study Area is identified as Future Residential within the Moama SLUP. It follows that before the subject land can be developed for residential purposes, land within the study area will need to be rezoned.

5.2 Moama West Infrastructure Strategy 2005

The Moama West Infrastructure Strategy for Stormwater Drainage, Sewerage, Road Network and Development Contribution Plan was prepared for Murray Shire to assess the infrastructure requirements for new development in West Moama. The document outlines principles for development which relate to stormwater, sewage, roads.

The Strategy provides a sound basis for the development of the Moama North West Master Plan, in particular the infrastructure requirements.

5.3 Murray Shire Development Control Plan

A Development Control Plan (DCP) is a detailed guideline that illustrates the controls that apply to a particular type of development or in a particular area. A DCP provides specific, more comprehensive guidelines for certain types of development, or small sections of the municipality or Shire. A DCP refines or supplements a regional environmental plan or local environmental plan and is made according to the Environmental Planning and Assessment Act 1979.

DCP's provide the statutory basis for decisions when development consent is sought. DCP's are important in the planning system because they provide a flexible means of identifying additional development controls and standards for addressing development issues without the need for a formal statutory plan.

The Murray Shire Development Control Plan is the document which provides details of the various standards, policies and guidelines adopted by Council for development in its Local Government Area. It also assists developers in designing proposed developments and preparing their applications to Council.

There are 13 Chapters that constitute Murray Shire DCP that provide guidance on various types of development, whether within a certain zone, specific to a certain site or generic controls applicable to all types of development generally.

Those chapters relevant to the Moama North West Master Plan are:

- Chapter 1. Urban and Village Zones
- Chapter 7. Floodprone Land

5.4 Standard Instrument (Local Environmental Plans) Order 2006

The Standard Instrument (Local Environmental Plans) Order 2006 puts in place a standardised format for new Local Environmental Plans (LEP). When preparing a new LEP, all Council's must use the standard instrument. The aim of this is to ensure all local plans across NSW use the same planning language. The Standard Instrument is divided into five parts:

1. Preliminary
2. Permitted and Prohibited Development
3. Exempt and Complying Development
4. Principle Development Standards
5. Miscellaneous Provisions

In order to implement the proposed Master Plan, Council will need to prepare a new LEP for the study area, or parts of the study area. Council will need to ensure that any new LEP complies with the Standard Instrument (Local Environmental Plans) Order 2006.

6 Demographic Profile

As part of the process for preparing a strategic plan which will provide guidance to the future development of the study area, it is important to understand the current and future demographic profile of the area and of the community.

For the purpose of this study, this section of the report will focus on the combined Moama and Echuca locality as they operate effectively as one residential community with common land use issues and a range of commercial and community services and facilities servicing both communities. This is common along the New South Wales and Victoria border.

6.1 Residential Supply

6.1.1 2006 Census

In 2006, there were a total of 6,945 dwellings (including unoccupied dwellings) in both Moama and Echuca. Of this, there were 1,389 occupied dwellings in Moama and 4,906 occupied dwellings in Echuca. These dwellings were primarily detached (approximately 78% of all dwellings) with only a limited number of attached dwellings.

In Moama, 13% of dwellings were unoccupied, compared with 9.5% in Echuca.

Table 1. Dwellings - 2006

	Echuca (Urban Centre Locality)		Moama (Urban Centre Locality)	
	2006	%	2006	%
Separate house	**4,258**	**79%**	**1,201**	**76%**
townhouse etc. with:				
One storey	557	10%	102	6%
Two or more storeys	16	0%	10	1%
Total	**573**	**11%**	**112**	**7%**
Flat, unit or apartment:				
In a one or two storey block	415	8%	181	12%
In a three storey block	0	0%	0	0%
In a four or more storey block	10	0%	0	0%
Attached to a house	0	0%	0	0%
Total	**425**	**8%**	**181**	**12%**
Other dwelling:				
Caravan, cabin, houseboat	91	2%	78	5%
Improvised home, tent, sleepers out	3	0%	0	0%
House or flat attached to a shop, office, etc.	23	0%	0	0%
Total	**117**	**2%**	**78**	**5%**
Not Stated	0	0%	0	0%
Total Occupied Dwellings	4,906		1,389	
Total Unnocupied Dwellings	467		183	
Total	**5,373**	100%	**1,572**	100%

Source: Census of Population and Housing, ABS 2006

6.1.2 Recent Dwelling Approvals

Moama Dwelling Approvals

In assessing the supply of dwellings in Moama, MacroPlan has examined development statistics collected by the Murray Shire of the nature and rate change in dwelling stock to identify the take up of new housing in the Moama Township.

MacroPlan note that there have been significant revisions to ABS building approvals data for the Murray Shire following some reporting problems over the past year. This presents difficulties in comparing and reconciling ABS data with data reported by the Murray Shire.

The average number of dwelling approvals over the period 2001-02 to 2005-06 was approximately 106 per annum. This is greater than the historical average of 84 new dwelling approvals over the period 1994-2002[1].

Table 2. Dwelling Approvals - Moama

	2001-02	2002-03	2003-04	2004-05	2005-06	
Moama	63	79	86	104	*86*	(1)
Moama Rural	46	43	7	8	*7*	(1)
Total	109	122	93	112	93	

Source: Murray Shire Council

(1) Estimated based on previous year share of total dwellings.

It should be noted that the decline between 04/05 and 05/06 most likely reflects a reduction in the number of available lots due to the higher rate of approvals the previous year. In other words, the reduction in the number of approvals potentially reflects a return to normal approvals.

Echuca Dwelling Approvals

MacroPlan has examined ABS dwelling approvals data over the period 2001-2006 to assess the recent take up of new housing in the Echuca Township.

Between June 2001 and June 2006, there were approximately 728 new dwelling approvals in the Echuca Township. This equates to approximately 145 new dwellings approvals per annum over this period which is in line with the housing requirements forecast by population growth.

Total Dwelling Approvals

In total, there have been approximately 250 building approvals per annum for the Echuca and Moama Townships. Of this, the Moama Township has been responsible for approximately 42% of total building activity. This recent growth in building approvals in Moama indicates that population forecasts used to determine household demand may have underestimated dwelling demand in the townships.

It is important to note that not all building approvals generate a new dwelling. For example some dwelling approvals are replacements and do not increase the stock of dwellings in the region. This may lead to an overstatement of the supply of dwellings in the region.

[1] Murray Shire Council (reported in the Moama Development Strategy, p.24)

6.2 Dwelling Demand

This section of the report provides an assessment of the demand for housing in the Moama and Echuca Townships. Typically dwelling demand is considered in the context of demand drivers which include, population growth, population composition, household size and numbers and migration.

6.2.1 Regional Context

It is important to establish an understanding of the regional context within which Moama and Echuca exist. This provides a regional context for the Moama and Echuca assessment.

The increasing pressure on housing demand in the Murray SLA and Echuca Township is illustrated thematically in the figure below. Both Moama and Echuca have experienced strong population growth between 2000 and 2005. In contrast, many rural SLA's across New South Wales and Victoria have experienced stagnant growth or decline, indicating a shift of population away from small rural settlements into more urbanised settings with key economic and social infrastructure.

This movement of population is largely driven by the ability of larger rural townships to provide greater diversity in employment opportunities and in turn better social services in areas such as health and education.

Figure 3. Regional Population Growth

SLA Name	2001	2006	Growth Rate 01-06
Campaspe (S) - Echuca	11,087	12,411	2%
Murray (A)	6,156	6,782	2%
Campaspe (S) - Kyabram	12,738	12,849	0%
Campaspe (S) - Rochester	8,709	8,819	0%
Campaspe (S) - South	3,815	3,822	0%
Gannawarra (S)	12,055	11,610	-1%
Loddon (S) - North	3,558	3,447	-1%
Moira (S) - West	18,523	18,828	0%

Source: NSW department of planning (2005), DSE Vic (2004), Macroplan (2008)

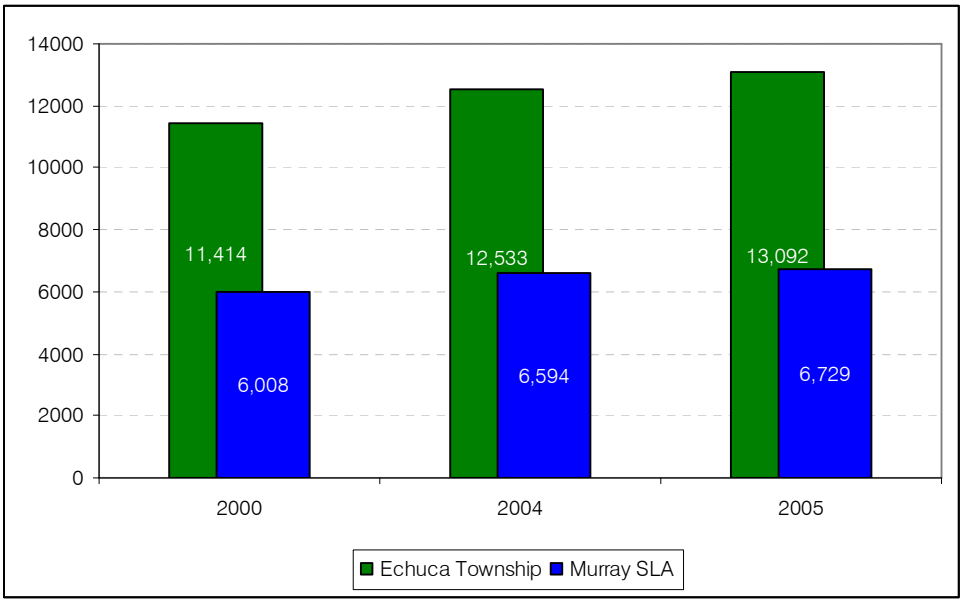
Population Growth – 2000 to 2005

The ABS produces regional population estimates down to the Statistical Local Area (SLA) level. MacroPlan has assessed population trends in the Murray SLA and the Echuca Township as a guide to demand in the townships.

An assessment of the ABS Regional Population Growth between 2000 and 2005 reveals the following:

- Between 2000 and 2005, the population in the Murray SLA, as distinct from the Moama Township, grew from approximately 6,000 persons to 6,700 persons, an increase of 2.3% per annum. This understates the population growth in Moama given that it is the main urban growth area in the Murray SLA.
- Echuca Township grew from approximately 11,400 to 13,000, an increase of 2.8% per annum.

Figure 4. Population Growth – Murray SLA and Echuca Township



Source: 3218.0 - Regional Population Growth, Australia, 2004-05

Figure 4 above demonstrates that the Moama and Echuca as a combined region are experiencing population growth. This translates to positive growth in the demand for housing and goods and services.

Changes in Population Composition

The table below depicts the long-term demographic changes in the Murray SLA and the Campaspe – Echuca SLA (Echuca Township)[2]. It reveals the following:

- The population in the Murray SLA is older (median age 44 in 2006) than the population in Campaspe-Echuca SLA (median age 38 in 2006). In both locations median age has increased since 1996.
- Murray SLA's share of persons aged 65 and over has increased by 6 percentage points over the period 1996-2006. This implies an increased need for accommodation which suits the needs of those aged 65 years and older.
- Continuing importance of detached dwellings. Detached houses made up for approximately 85% of all dwellings in the Murray SLA, compared with approximately 80% in Campaspe-Echuca SLA.

Table 3. Population Characteristics – Census 1996, 2001, 2006

Murray SLA	1996	2001	2006
Median Age	37	40	44
Median Weekly Individual Income	243	332	395
Mean Household size	2.6	2.5	2.4
0-14	22%	21%	19%
15-24	11%	10%	9%
25-34	13%	12%	10%
35-44	14%	14%	13%
45-54	13%	13%	14%
55-64	11%	13%	15%
65+	15%	17%	21%
Separate house	80%	83%	85%
Semi-detached, row or terrace house, townhouse etc. with:	2%	6%	4%
Flat, unit or apartment:	12%	5%	7%
Other dwelling:	6%	5%	5%
Dwelling structure not stated	1%	1%	0%
Total	**1976**	**2295**	**2596**
White Collar	881	1012	1109
Blue Collar	758	882	998

Campaspe - Echuca SLA	1996	2001	2006
Median Age	36	37	38
Median Weekly Individual Income	267	346	423
Mean Household size	2.5	2.4	2.4
0-14	22%	22%	21%
15-24	12%	12%	12%
25-34	14%	13%	11%
35-44	15%	14%	14%
45-54	11%	13%	14%
55-64	9%	9%	11%
65+	17%	17%	17%
Separate house	80%	80%	80%
Semi-detached, row or terrace house, townhouse etc. with:	1%	4%	10%
Flat, unit or apartment:	13%	12%	8%
Other dwelling:	5%	4%	2%
Dwelling structure not stated	1%	1%	0%
Total	**3847**	**4291**	**4907**
White Collar	1200	1305	1515
Blue Collar	1498	1711	2016

Source: Census of Population and Housing, ABS 2006

The table above demonstrates while there is a general increase in the proportion on the population aged 65 and over; those aged 35-44 and 45-54 are stable. In addition it also highlights that dwelling demand is being driven by declining household size.

[2] ABS Time Series Profile is not available for Urban Localities such as Moama. Murray SLA has been used instead to build a picture of the historic demographic changes.

Migration

Internal migration, as distinct from international migration, has a large influence on population change in Moama and Echuca. The ABS Census 2001 is the primary source for historical migration data and has been obtained to identify:

- Persons who are currently living in the Campaspe – Echuca SLA and Murray SLA (as of the 2001 census), compared to where they lived 5 years ago (in-migration).
- Persons who lived in the Campaspe – Echuca SLA and Murray SLA five years ago (1996), compared to where they live now (out-migration).

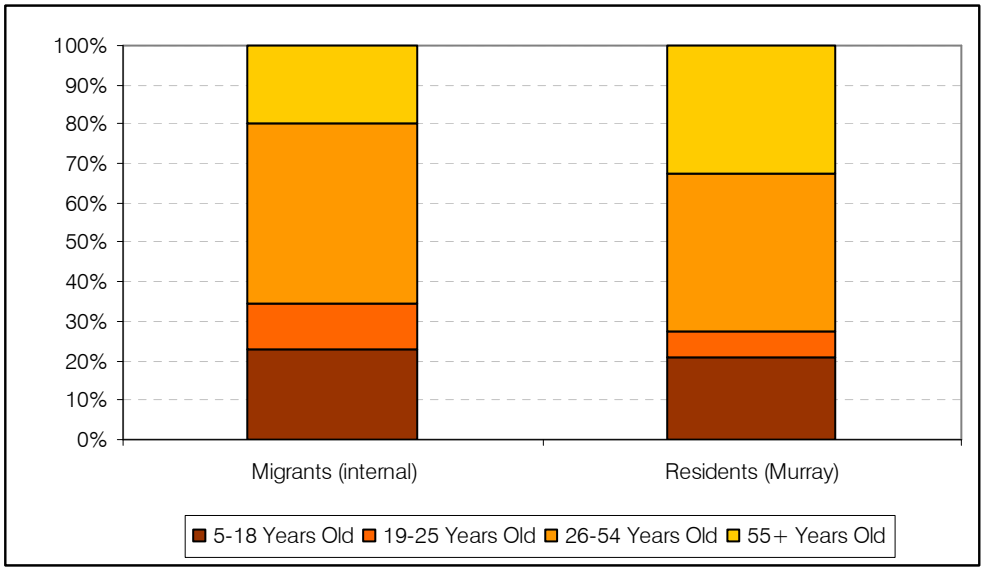
The analysis of migration data below for the period 1996 to 2001 highlights the key attributes of population growth over the period.

Age profile of new residents

The age profile of persons moving into the area differs from existing residents. The main findings include:

- There were a greater proportion of persons moving into the area aged 26-54 (46%) than there are existing residents in this age group (40%).
- There was a greater proportion of persons moving to Moama aged 19-25 (126%) than the proportion of current residents in this age group (6%). An analysis of net migration by locality shows that regional regions, namely Goulburn is responsible for this. As expected there is net out-migration of persons aged 19-25 to Melbourne, most likely looking for tertiary education, employment or other lifestyle opportunities.
- There were a lesser proportion of persons moving to the locality aged 55+ (20%) than the existing residents in this age group (32%).

Figure 5. Age Profile



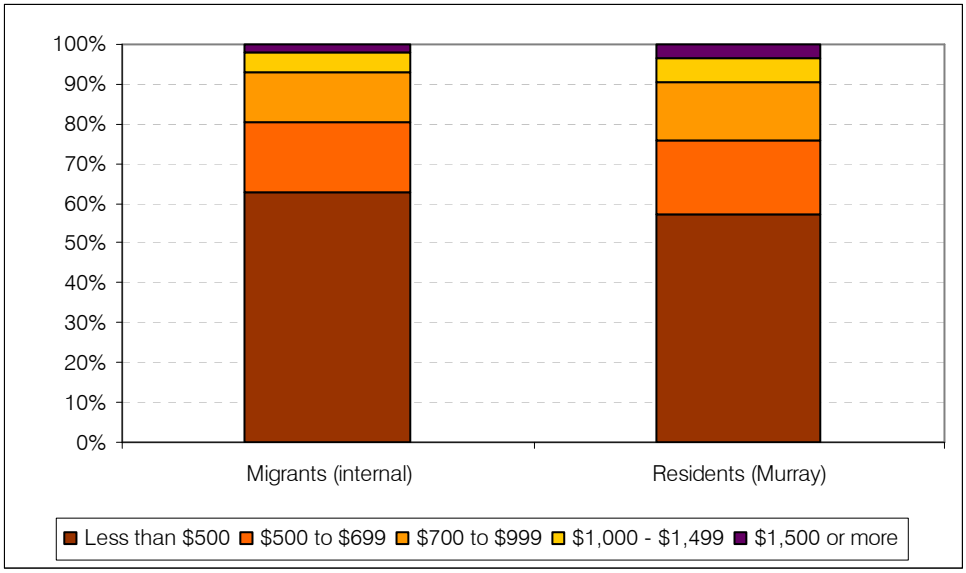
Source: Census of Population and Housing, ABS 2001 (custom tables); MacroPlan Australia.

This highlights the increasing importance of persons in the 25-54 age cohort because of their propensity to either start families or have a family with dependant children. This results in this group being more likely to be looking for employment opportunities.

Income

The individual weekly income of new residents compared with existing residents in Murray SLA is illustrated below. Over 63% of persons moving to the locality earned less than $500 per week. This compares to around 52% of existing residents who earn less than $500 per week. This highlights the need for affordable housing in the townships.

Figure 6. Income Profile



Source: Census of Population and Housing, ABS 2001 (custom tables); MacroPlan Australia.

Interestingly, the proportion of persons moving to the locality aged 26-54 are wealthier than the proportion of existing residents of the same age cohort. Approximately 28% of persons moving to Moama aged 26-54 earn over $700 per week, compared with less than 24% of current residents.

Geographic Movement

An assessment of the net movement between Murray SLA and other regions (excluding Murray SLA and Campaspe – Echuca) has revealed the following:

- Melbourne Statistical Division (SD) was the largest source of net in-migration (123 persons).
- Other regions in Victoria (including East Gippsland, Gippsland, Western District, Central Highlands, Wimmera, and Barwon) were the next largest source of net in-migration (100), which suggests that new residents are moving away from smaller rural towns into more urbanised setting with key infrastructure.
- There were small amounts of net migration from Goulburn (34) (excluding Campaspe – Echuca SLA)
- There was negative net migration to the Murray SD (excluding Murray SLA). This suggests that other towns such as Albury are attracting residents from the Murray SLA, potentially for employment opportunities.

6.2.2 Local Context

This section assesses projections of population and household size for Moama and Echuca Townships in order to estimate the dwellings requirement over the next 10 years.

Population Projections

In 2006, the population in Moama (Urban Centre Locality) was estimated at approximately 4,607 and Echuca (Urban Centre Locality), 12,517.

The NSW Department of Planning do not provide population projections below the SLA level (e.g. for Moama). In the absence of this data, MacroPlan have based population projections for the Moama Township on forecasts reported by the Murray Shire[3]. The population in Moama was forecast to increase from 4,607 in 2006 to approximately 6,193 in 2016, equating to approximately 1.5% growth per annum.

In forecasting population in the Echuca Township, we have adopted the ABS population figure for 2006 as the base year (i.e. 12,517), and projected annual average population growth estimated by the Victorian Department of Planning and Community Development[4] (DPCD formerly DSE). The annual average growth for Echuca between 2006 and 2016 has been estimated by the Department at 1.5%. Based on this, the Echuca Township population is forecast to increase from approximately 12,517 in 2006 to 14,558 in 2016, a net increase of 2,041 persons.

As illustrated in Table 4, the projected population for the combined Moama and Echuca Townships has been estimated to increase from approximately 17,124 in 2006 to 20,751in 2016, equating to an increase of 362 persons per annum over this period.

Table 4. Population Projections – Moama and Echuca Town Centres

	2006	2011	2016
Moama Urban Centre Locality	4,607	5,342	6,193
Echuca Urban Centre Locality	12,517	13,551	14,558
Total	17,124	18,893	20,751

Source: Murray Shire; Department of Sustainability and Environment (VIC); ABS Census 2006, MacroPlan Australia (2008)

Household Size

The household size of Moama Township as estimated in the 2006 Census is significantly lower than the household size of the Murray SLA. In 2001, the household size in the Moama Township and the Echuca SLA was approximately 2.4 persons per household. The household size in 2006 for the Moama Township was 2.3.

Household size has been consistently declining since 2001. According to many demographic commentators, this is as a result of many factors such as: changes in marriage and divorce rates, an ageing population, households having fewer children and starting families later in life. Combined with steady growth in population, the declining average household size results in an increase in demand for dwellings. This trend is evident in the population and household forecasts reported by the Victorian State Government's DPCD in relation to the Echuca Township.

[3] Moama Development Strategy, 2004

[4] Victoria in Future 2004

The household size in the Echuca Township is forecast to decline from approximately 2.3 in 2006 to 2.1 in 2016. It has been assumed that the household size in Moama will decline at a similar rate to the Echuca Township over this period.

The declining household size combined with steady population increases is also likely to fuel demand for household appliances, goods and services and will therefore contribute to job growth for the region.

Demand for Dwellings

The population projections and household size estimated above equate to the following demand for housing in the townships of Moama and Echuca:

- By 2016, there will be demand for an additional 2,436 dwellings (243 per annum) in the combined Moama and Echuca Townships. Of this, there is:
  - Demand for an additional 946 houses in Moama, or 95 new lots per annum between 2006 and 2016
  - Demand for an additional 1,490 houses in Echuca, or 149 new lots per annum between 2006 and 2016

This assessment reveals that the population growth in Moama will create demand for 39% of all new lots in the Moama and Echuca Townships. Recent trends in building approvals data however indicates that Moama's share of new lots could be as high as 42%. This trend is likely to continue and therefore demand for residential lots in Moama is likely to be higher than the projected demand for 95 new dwellings per annum.

Table 5. Dwelling Demand

	2006	2011	2016	per annum
Moama Urban Centre Locality	4,607	5,342	6,193	159
Household size	2.3	2.2	2.1	-
Dwelling requirement	**2,003**	**2,428**	**2,949**	**95**
Echuca Urban Centre Locality	12,517	13,551	14,558	204
Household size	2.3	2.2	2.1	-
Dwelling requirement	**5,442**	**6,160**	**6,932**	**149**
Total				
Dwelling requirement	**7,445**	**8,588**	**9,881**	**244**

Source: MacroPlan Australia (2008)

While these projections split demand between the two townships, it is clear that they operate as one residential market. However, there are important sub-markets for housing driven by various consumer demands.

Locational Demand Drivers

Moama offers significant potential for new supply of well located residential land. The location of the identified "future residential land" in Moama has a number of advantages when compared to Echuca. The locational characteristics driving demand in the Moama Township include:

- Easy access to the Murray River providing recreational opportunities which will appeal to families and retirees. The growth areas to the west and south in Echuca are unlikely to provide comparative access.

- There are a number of recreational facilities located in Moama which are likely to drive demand for housing and tourism. Recreational facilities include the Rich River Golf Club, Echuca-Moama RSL, and Sports Club.
- There are significant employment opportunities emerging in Moama with the industrial land located on the Cobb Highway in Moama. It is important to locate residential land in proximity to future employment nodes. The residential land to the west and south of Echuca are further from this employment node. Releasing adequate residential land supply located in close proximity to the future employment node along the Cobb Highway is likely to lead to economic sustainability outcomes.
- Water supply and untreated water supply (e.g. for garden use) is available in most areas of Moama but not in all areas of Echuca.
- Environmental issues, such as water conservation, are likely to impact on lot sizes in the region. It is likely that there will be a trend away from larger lot sizes towards a more sustainable form of residential development.

7 Key Elements

The review of the key background documents including state, regional and local planning policy, the demographic profile and consultation with key stakeholders have identified the following key elements. These four key elements are of importance to the future development of the area and will influence the development of the Master Plan.

1. Traffic, Transport and Movement Networks
2. Natural Environment and Landscape
3. Recreational and Open Space Linkages
4. Physical Urban Infrastructure

7.1 Traffic, Transport and Movement Networks

Perricoota Road

Perricoota Road is a key element in the movement network as a major arterial road from the Moama Township to the west. Also known as Moama-Barham Road, it is classified as an arterial road and extends approximately 104km northwest from Moama to Barham. Traffic volumes set out at Section 10.7 of the Moama West Infrastructure Report prepared for Murray Shire Council by EarthTech Engineering Pty Ltd (dated 27th June, 2005) indicate that Perricoota Road currently carries the following traffic (2003 estimates):

- 4,318 vehicles per day east of the junction with Twenty Four Lane,
- 5,693 vehicles per day west of the junction with Western Cobb Hwy, and
- 6,850 vehicles per day west of the junction with existing Cobb Hwy.

Cobb Highway

Cobb Highway is a state highway which extends north from Echuca through New South Wales (via Deniliquin). At the iron bridge crossing of the Murray River, Cobb Highway currently carries more than 20,000 vehicle movements per day and is operating beyond its capacity for a single traffic lane in each direction.

Other Roads

Martin Road is a local access street which extends approximately 2km in a north-south direction between Twenty Four Lane and Cobb Highway (existing alignment).

Twenty Four Lane is a local access street which extends north from Perricoota Road along the western boundary of the study area and provides a connection to the golf course. Currently Twenty Four Lane carries in the order of 3,125 vehicles per day north of Perricoota Road (2003 estimates).

Boyes Road is an unsealed local access street which extends approximately 1km between Lignum Road and Cobb Highway (existing alignment). Boyes Road changes name to Nicholas Drive and extends further east through Moama Township.

Lignum Road is an unsealed local access street which extends approximately 2km in a north-south direction between Martin Road and Perricoota Road.

Kiely Road is a local access street which extends west from Lignum Road across the northern boundary of Moama Township and connects to Barnes Road just west of the Deniliquin railway line.

Kirchhoffer Street (also known as Racecourse Road) is an unsealed local access street which extends approximately 1.4km in a north-south direction between Kiely Road and Boundary Road

Issues

- Perricoota Road currently provides the main access from the Moama town centre to the Study Area.
- An alternative road connection to the study area could be provided along Martin Road.
- Cobb Highway is a major state highway and there are safety concerns with access and egress to the site via this road.
- Future pedestrian and cycle paths could be provided along the proposed Drainage/Open Space to enhance the linear corridor and connect to other recreation areas.

Implication for the Master Plan

- Road access to Perricoota Road, Martin Road and Cobb Highway needs to be restricted.
- There are good opportunities to utilise the proposed Drainage/ Open Space for pedestrian and bicycle links to create linear connections between the Rich River Golf Club to the Moama Recreation Reserve and Sport Club.

7.2 Natural Environment and Landscape

There is a need to contribute to the protection of air, land and water quality. Best practice planning principles aim to ensure that new development is responsive to identified environmental issues including water quality, water catchment areas, soil removal, and the protection of native flora and fauna and remnant vegetation.

Issues

- The Study Area has a long agricultural history and is highly disturbed with little native vegetation remaining.
- The study area is subject to inundation due to a drainage depression which traverses the site.
- An area of significant vegetation, 'Grey Box' exists towards the centre of the site and along Kiely Road.
- There is substantial scope to improve the environmental condition of the Study Area, particularly where significant vegetation remains.

Implication for the Master Plan

- Opportunities exist for re-vegetation to enhance the condition of the Study Area.
- Design of the Master Plan needs to retain existing significant native vegetation, where possible.
- Preservation of the existing open landscape character and rural amenity, recognising the rural and industrial interface to adjoining land.
- Improving the aesthetic appeal of the area by utilising the natural features on the site.

7.3 Recreation and Open Space Linkages

The development of accessible recreation and open space linkages is an important element of the planning and development of the Study Area. Planning authorities should ensure open space areas are linked, integrated and incorporated with other recreation and open space areas to create a network.

Issues

- There is the opportunity to combine the provision of open space and a drainage network through the middle of the site ensuring protection of the 'Grey Box' woodland.
- The Moama Recreation Reserve and Moama Sports Club are located to the south east of the Study Area.
- The Rich River Country Club Motel and Golf Club are located to the north of the Study Area.
- An opportunity exists to connect the Golf Club with the Recreation Reserve and Sports Club through a linear open space area through the site.

Implication for the Master Plan

- Ensure that the design of the Master Plan facilitates attractive, convenient and safe pedestrian access through the site and provides active connections to surrounding land.
- To ensure the Master Plan provides for safe, attractive and convenient bicycle access.
- There are excellent opportunities to provide a linear open space network within the existing drainage depression.
- The linear open space network should be designed to connect the Rich River Golf Club to the Moama Recreation Reserve and Sport Club

7.4 Physical Urban Infrastructure

Physical Urban infrastructure includes water, sewage, electricity, telecommunication, sealed roads and other services.

Issues

Water and Sewerage

- Mains water pipes are currently in place along Perricoota Road, Twenty Four Lane and the Cobb Highway. Council anticipates new filtered mains water pipes along Martin Road, Lignum Road, Kiely Road and Boyes Road.

- The existing sewage system connects to a central pumping station located on Kiely Road, east of the Cobb Highway or the pump station at Business Park. There is an expectation that at least one pumping station will be required to be constructed to service development within the Study Area.

Stormwater Runoff/ Water Quality

- The topography of the land allows for a simple stormwater retention and treatment area within the existing drainage depression which can then be discharged to the Murray River.

- Water Sensitive Urban Design (WSUD) techniques should be a fundamental expectation of development within the Study Area. Bioswales, rain-gardens, litter traps and wetlands could be utilised throughout the development.

- An opportunity exists to further enhance the urban design outcomes by utilisation of water harvesting for re-use on playing fields and parklands within and in close proximity to the Study Area.

Gas, Electricity and Telecommunication

- Gas, electricity and telecommunications can be provided to development within the Study Area in accordance with the normal development policies of the supply authorities.

- Gas, electricity and telecommunications are traditionally at the developers cost.

Roads

- Road construction is essentially driven by the engineering standards of Council based on the function of each road/ street.

- New roads will either have a Regional Function (servicing the whole Study Area) or a Local Function (servicing a specific stage or precinct).

Implication for the Master Plan

- Consideration needs to be given to the existing infrastructure during the preparation of the Master Plan.

- Provision of suitable infrastructure (water and sewerage; stormwater; gas electricity and telecommunication) within the precinct will need to be considered at subdivision stage.

- A suitable road hierarchy needs to be developed for the Study Area.

8 Sustainable Development

8.1 Environmentally Sustainable Development

Environmentally Sustainable Design (ESD) has become an increasingly important consideration in recent years. A sustainable urban form should derive from development which provides for the needs of the current generation without compromising the needs of future generations.

The following section outlines the key elements of sustainable communities.

8.2 Key Elements of Sustainable Communities

One of the primary objectives in planning for settlements or extensions to existing urban areas is to design a framework for a community that is sustainable, safe, vibrant and efficient. A number of design issues need to be considered in an integrated manner and are best dealt with in "high level" planning documents. For the purpose of the Moama North West Master Plan, the following Key Elements of Sustainable Communities are fundamental components of the Master Plan:

1. Neighbourhood Linkages
2. Connected Streets
3. Pedestrians and Cycling
4. Integrated Open Space
5. Lot Sizes, Housing Diversity and Dwelling Density
6. Urban Water Management
7. Local Activity Centres

Element 1: Neighbourhood Linkages

It is important built form, layout and design of development integrates with the adjoining land and the neighbouring community. Pedestrian and vehicle linkages between neighbourhoods should be considered when planning for social interaction within neighbourhoods.

OBJECTIVES

- To develop an interconnected street network that specifically aims to attract a high level of use by pedestrians, cyclists and motorists.
- To establish a movement network that provides safe and convenient linkages to local facilities and services both within and between neighbourhoods.

Element 2: Connected Streets

A comprehensive network of streets, cycling lanes and footpaths is desirable. A legible and permeable road network can reduce vehicle trips dependency and congestion at major intersections. A modified grid street network provides residents and visitors with alternative routes for destinations within and throughout the surrounding areas.

OBJECTIVES

- To create a modified grid network of roads, bicycle paths and footpaths that is well connected to surrounding areas.
- To provide motorists with route options.
- To reduce the number of car trips and promote green travel options within the estate including walking and cycling.
- To create streets that allow for easier navigation and better allotment orientation.
- To achieve high levels of pedestrian, bicycle and vehicular safety and amenity.
- To create a road hierarchy which is internally and externally connected and allows for local access to open space, schools, community services and activity centres, some of which may be located in areas outside the development boundaries.
- To distribute traffic evenly throughout the neighbourhood.

Element 3: Pedestrians and Cycling

A well planned network of walking and cycling routes allows people to travel with safety and convenience, whether on foot, bicycle, or other forms of transport. The best walking and cycling routes include a well-connected network of footpaths, shared paths for pedestrian and cyclists and paths for recreation and leisure. These facilities attract further users and improve passive surveillance to contribute to the safety of neighbourhoods.

OBJECTIVES

- To provide a safe, convenient and legible movement network for pedestrians and cyclists, principally along the street network.
- To design street networks to optimise walkable access throughout the study area.
- To provide shared spaces where motor vehicles, cyclists and pedestrians share the same space.
- To provide pedestrian paths through parks for recreation purposes.

Element 4: Integrating Public Open Space

A connected open space network which is easily accessible provides places for people to walk and cycle to, in and around. Parks and open spaces provide for active recreation, play and social opportunities for children and youth and offer pleasant spaces for older adults to walk to and gather. Parks and open spaces can also utilise the natural features and vegetation on the site.

OBJECTIVES

- To ensure that a linear public open space network is achieve in a timely manner.
- To ensure that safety and surveillance of open spaces areas is delivered through appropriate design.
- To ensure that public parkland is integrated into the urban structure to produce both land use efficiency and long-term sustainability.
- To locate, preserve and integrate natural features into public open space.

Element 5: Lot sizes, housing diversity and dwelling density

A range of allotment sizes should be encouraged throughout the development. This allows for increased housing choice and affordability, while maintaining the maximum overall yield. Lots should be designed to have the appropriate area and dimensions to enable the siting and construction of a dwelling and associated outbuildings. The provision of open space and convenient vehicle access and parking should also be considered in the design and layout of residential allotments.

OBJECTIVES

- To provide a range of residential lot sizes to suit the variety of dwelling and household types.
- To produce lot layouts which take advantage of natural features on the site and wherever possible, optimise orientation to suit energy efficient housing.
- To arrange lots to front streets and parklands such that development enhances personal safety, traffic safety, property safety and security; and contributes to streetscape and park quality.
- To facilitate higher densities closer to the Moama town centre and adjacent to high amenity areas such as parks and recreation reserves.
- To facilitate ‘rear-loaded lots’ (i.e. garaging is provided from rear lanes) where allotments face collector or arterial roads.

Element 6: Urban Water Management

Water sensitive urban design WSUD aims to reduce the quantity of stormwater and improve the quality of water that is either discharged or re-used on site. Water is now recognised as an important resource and it is necessary to ensure that water run-off does not cause deterioration of the receiving water body. It is also important to reduce the amount of potable water we use.

OBJECTIVES

- To facilitate integrated stormwater drainage system with other uses such as road verges, parklands and walking paths which improves the aesthetic appeal.
- To ensure that irrigation of low function areas and impervious surfaces are reduced by reducing front setbacks and the length of driveways.
- To ensure the use of drought proof and salt resistant vegetation to reduce water consumption.
- To protect the built environment from flooding, inundation and stormwater management.
- To facilitate a combined public open space/ drainage reserve within the study area.

Element 7: Local Activity Centres

Local convenience shopping and services which are in walking or cycling distance provide a focal point for people to walk to within their neighbourhood. These small centres encourage physical activity while also reducing dependence on the car for local short journeys. Naturally, these destinations attract people of all ages in the community.

OBJECTIVES

- To ensure that new areas of predominantly residential development are provided with sufficient and appropriately located land for local commercial and service needs.

9 Consultation

9.1 Consultation Strategy

A consultation strategy was developed in order to engage and obtain relevant information from all key stakeholders. This included council staff, land owners and the local community.

The objectives of the community consultation process are to:

- Identify project stakeholders and encourage their involvement in the community consultation process and development of the Moama North West Master Plan;
- To obtain stakeholder and community feedback by providing a variety of means for stakeholders to raise ideas, issues and concerns;
- To work directly with stakeholders and community throughout the process to ensure that ideas, issues and concerns are consistently understood and considered.

9.2 Consultation Process

The consultation process is divided in to three parts as outlined in Table 6 below.

Table 6. Consultation Process

		Completion Date
Part 1	Workshop with council staff	5 September 2007
Part 2	Individual meetings/conversations with key landowners	November 2007
Part 3	Formal exhibition of Draft Master Plan	14 April 2008

9.3 Consultation Outcomes

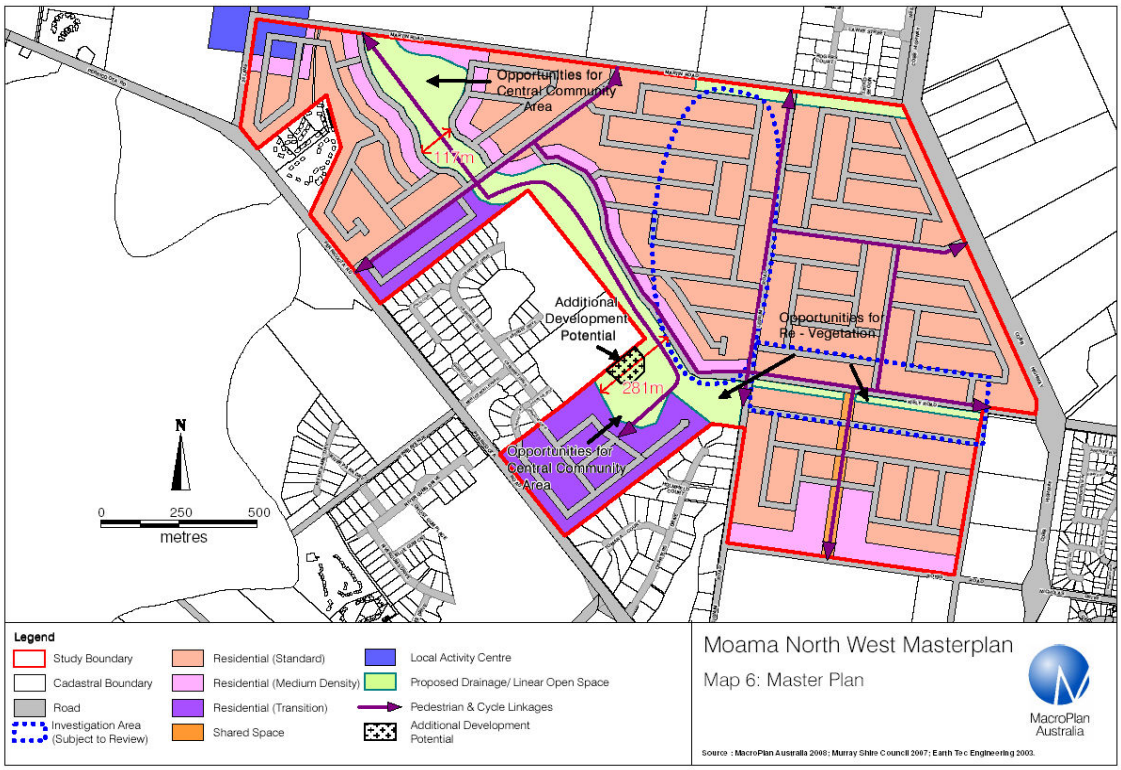
The involvement and contribution from the local land holders was sought during the preparation of the Moama North West Master Plan. Individual consultation was carried out with local land holders. A number of issues and comments were raised by stakeholders, which are summarised below:

- Land in Moama is predominantly owner occupied.
- There is currently a take-up of 3 blocks per month in Lakeview estate and on adjoining land.
- The market is demanding lots of approximately 300-450m^2.
- There are limited development opportunities in Echuca with a similar proximity to the Murray River and services due to the topography.
- There is a need to accommodate retirement living while also balancing this with the needs of other permanent residents.
- There is a demand for permanent homes for the 55+ age group.
- Other retirement development in Moama such as Cobb Haven indicates there is sufficient demand for similar or more upmarket retirement housing product.

10 Master Plan

This section of the report must be read on conjunction with the Moama North West Master Plan, Book of Plans (MacroPlan Australia, 22 January 2009).

Figure 7. Master Plan



Source: MacroPlan Australia (2009)

10.1 Vision

The Master Plan will guide the future development of the Moama North West area. The development of an overarching vision for the area will ensure the area develops in accordance with Council and the communities expectations.

Murray Shire Management Plan 2007/08, 2008/09 and 2009/10

The vision for the Murray Shire is outlined in the Murray Shire Management Plan. The plan contains eleven main principal activities including:

- Administration
- Public Order and Safety
- Health
- Community Services and Education
- Housing and Community Amenities
- Water Supplies
- Sewerage Services
- Recreation and Culture
- Mining, Manufacturing and Construction
- Transport and Communication
- Economic Affairs

The guiding principles under the Murray Shire Management Plan are listed below where relevant to the development of the Moama North West Master Plan.

- Develop and implement Strategic Plans and Planning Instruments for the Murray Shire to ensure development occurs in an environmentally conscious and constant approach to provide an efficient and effective integrated approvals process.
- To maintain open waterways, pipe drainage systems and detention basins to ensure efficient removal of stormwater from Council owned and controlled areas and private property, and to minimise direct discharge to the Murray River and tributaries.
- The provision of sewerage collection, transportation and treatment facilities to meet the current and future needs of Moama and Mathoura.
- Provide, maintain and improve parks, gardens and natural bush land areas in the Murray Shire to create an aesthetic and passive environment for the enjoyment of residents and visitors alike.
- Provide an adequate and safe transport network within the Murray Shire.
- NSW and Victorian Governments, in conjunction with Federal Government, to commit to the early construction of the Western Bridge Option and associated roadworks linking Perricoota Road with the Cobb Highway.
- To maintain and construct urban streets and associated traffic facilities for safe and efficient usage.
- To provide, maintain and improve an adequate footpath system within the urban areas for the movement of pedestrians, including those with disabilities.
- Provide facilities that encourage safe cycle usage within urban centres of the Murray Shire.
- Provide adequate street lighting facilities in urban areas of the Murray Shire.

The Moama North West Master Plan aims to build on these principles to implement the elements of Council's Vision.

Master Plan Vision

The Moama North West Master Plan aims to facilitate a sustainable, healthy and accessible residential community for the future which integrates and enhances the liveability and the semi-rural character of the Moama North West area.

10.2 Analysis of Master Plan

Section 10.2 provides a summary of the key inputs, influences and considerations which have been incorporated to produce the Master Plan. This section will discuss the Master Plan in seven key parts. Each section sets out Key Elements and Features which must be considered during the subdivisions stage of development.

1. Drainage and Natural Features
2. Open Space
3. Residential Areas
4. Local Activity Centre
5. Movement Networks
6. Shared Spaces
7. Allotment Design

Drainage and Natural Features

The study area and its topography is generally flat with minimal urban development. Pockets of native vegetation including Grey Box, White Cyprus Pine and Yellow Box Woodland exist throughout the precinct notably along road reserves and in the south of the precinct.

A natural depression (major and moderate) traverses the site from the north-west towards the south-east corner. In times of heavy rain, water pools in the low lying areas as a result of the topography of the land. Refer to Map 1 for more detail.

The natural depression through the study area provides an opportunity to provide a stormwater drain which can utilise Water Sensitive Urban Design Techniques (WSUD) to protect the built environment from flooding and inundation.

Two investigation Areas have been identified which are subject to further review. These include:

1. Kiely Road: The area along Kiely Road is subject to review of the native vegetation (Map 1) within and adjacent to the road reserve.

2. Lignum Road: The area along Lignum Road is subject to review of the native vegetation (Map 1) within and adjacent to the road reserve. Land in this area may also be required for drainage purposes.

Development Principles

- The natural depression through the study area is to be developed as the primary Drainage/ Linear Open Space Corridor.
- The Drainage/ Linear Open Space Corridor will be a key focal point within the study area.
- Development within the Keily Road Investigation Areas must give consideration to the following:
  - widening and extending the proposed open space area if required to protect native vegetation; and
  - re-alignment of Kiely Road if required to protect and maintain the native vegetation.
- Development within the Lignum Road Investigation Area must give consideration to the following:
  - extending the open space corridor in a north-south direction if required to protect native vegetation;
  - extending the drainage corridor if required for drainage purposes; and
  - creating a linear open space link to Martin Road;
- A Natural Landscape Theme should be embraced throughout the study area by enhancing the indigenous landscape, vegetation and waterway features of the area.
- Planting and vegetation should be Australian native species with a preference to local indigenous species.
- Native Vegetation throughout the study area must be protected and maintained.
- Removal of Native Vegetation cannot occur until a detailed Flora and Fauna Assessment has been prepared by a suitable qualified professional to the satisfaction of Council.

- Revegetation and management of significant native vegetation must occur and should aim to create viable habitat areas that consist of local indigenous species.

- Drainage systems are to be designed as simple engineering systems (shallow ponds), to enable minimal maintenance over time.

- Vegetated channels and on-line linear wetland systems are to be established along the Drainage/ Linear Open Space Corridor.

- Cycle and pedestrian paths are to be designed to be fully integrated with the drainage system within the designated Drainage/ Linear Open Space Corridor.

- Piped drainage systems connecting to the Drainage/ Linear Open Space Corridor will be utilised for all developable land within the Precinct. Filling of developable land may be required to facilitate adequate site drainage to the main linear channel and wetland systems.

- The reuse of grey water generated within the future development for garden/lawn irrigation is encouraged if it is reticulated using a sub-surface irrigation system. Grey water may also be utilised to supply toilet cisterns.

- All development should incorporate sustainable landscaping practices to minimise irrigation demand within any new development in the long term.

- Water Sensitive Urban Design measures are encouraged to be implemented within development designs.

Open Space

The natural depression and native vegetation on the site have been combined to create a linear public open space network combined with stormwater storage and drainage (refer to Map 2). The use of this space will serve a dual purpose; provision of open space and stormwater storage and drainage as required.

Development Principles

- Approximately 12 percent of the study area (29.58 hectares) of open space is to be provided within the study area.
- The proposed open space and designated shared space will link the study area to the Moama Recreation Reserve and Moama Sports Club.
- Future open space links to the north of the study area should be considered to provide connection to the Rich River Country Club.
- All dwellings are located within 500 metres of a proposed open space area as illustrated in Map 2.
- Local parks should be encouraged throughout the study area with the location to be determined at planning permit stage to the satisfaction of Council.
- An open space corridor to the south of Kiely Road will allow for the protection of the Native Grey Box.
- A significant area of open space is proposed to the west of the Lignum Road with a maximum width of 281 metres. Opportunities for revegetation of this area exist to offset those areas where native vegetation will be lost.
- Central community areas should be located in the north and south of the proposed open space. These areas should accommodate picnic facilities (seating and public BBQ's), gazebo's and children's play equipment.
- At least one vehicle bridge road connection should be provided over the open space area to create linkages throughout the study area.
- A network of primary and secondary walking and cycling paths should be developed to encourage activity within the linear open space.
- Primary walking and cycling paths must be provided in accordance with Map 8.
- Secondary walking and cycling paths must be developed during planning permit stage to provide linkages to primary paths and open space areas.
- All open space areas should be landscaped with Australian native species which are predominantly indigenous to the area, enhancing the natural features and maintaining the Australian Landscape theme throughout the study area.
- Drought proof and salt resistant vegetation (including non-indigenous plants) to reduce water consumption should be utilised throughout the open space area where appropriate.
- Maintenance and revegetation of native vegetation is to occur in designated Drainage/Linear Open Space Corridor.

Residential Areas

The Moama Strategic Land Use Plan (SLUP) designates the use of the study area for Residential (future). A range of densities and housing options should be provided throughout the site to meet the needs of the community. The Study Area comprises approximately 205 hectares of developable residential area.

Standard Densities will occur in the majority of the study area. Areas near the drainage/ open space corridor and the Moama Recreation Reserve and Moama Sports Club will have a higher amenity and as such, development should be maximised i.e. Medium Density. Residential (Medium Density) areas are also encouraged in the north-west corner of the study area surrounding the area designated 'potential future secondary commercial node' in the SLUP.

A lower density will need to be achieved in areas adjacent to the low density and rural residential estates to ensure a transition in density between existing residential area and the study area.

An area of Additional Development Potential (0.85ha) has been identified adjacent to the existing Lakeview Estate.

Refer to Map 3 for more detail.

Development Principles

- Density throughout the study area will vary, in order to cater for a range of medium, standard and low density residential development in appropriate locations. Density must be in accordance with the Murray LEP
- Allotment sizes in the Residential (Transition) area must be compatible with neighbouring estates. Allotment sizes will vary from 750sqm to 2000sqm in the Residential (Transition) area however will be required to be 1300sqm to 2000sqm when adjoining low density residential or rural residential property.
- Medium Density housing may occur in appropriately zoned Residential (Standard) areas to increase allotment diversity. Council must consider each application on an individual basis.
- Front setbacks should be minimised with house design and built form contributing to the streetscape character and activity.
- Water tanks and other water sensitive urban design principles are to be integrated into all developments. Third pipe recycled water to be provided to residential dwellings where available.
- High quality remnant vegetation should be retained where possible
- High front fences must not be constructed in order to create an open and attractive streetscape that maximises passive surveillance. All development fronting open space must maximise passive surveillance. Fencing in Residential (Transition) areas must be consistent with the semi-rural character and the use of colorbond fencing restricted in this area.
- On street parking must be maximised to provide ample parking for visitors. This is especially encouraged in the Residential (Medium Density) areas.
- Alternative housing opportunities such as retirement living should be encouraged. Council must consider the application in terms of the needs of retirees in particular, the proximity to services, facilities and open space.

- Gated communities are discouraged as they restrict permeability and connectivity within the study area.
- The area marked Additional Development Potential should be considered for residential development if it can be demonstrated that:
  - access to the land can be gained from the property to the west and not through the proposed drainage/ linear open space;
  - no native vegetation will be affected as part of the development;
  - the drainage scheme for the study area will not be affected as part of the development;

Local Activity Centre

In the north-west corner of the study area there is a small parcel of land which is designated for a Local Activity Centre. This area is described as a 'potential future secondary commercial node' in the SLUP. This site would act as the primary location for convenience shops, community services, bus stops or any other local services. To create a critical mass to support this centre, development surrounding this site should occur at increased densities.

Refer to Map 4 for more detail.

Development Principles

- The local activity centre has an area of approximately 8 hectares of which 1.8 ha is located within the study area. This centre is to provide for local services and shopping facilities.
- The site should be designed to accommodate future public transport routes (i.e. bus routes) and associated buildings and works (i.e. bus stops).
- Medium Density housing should be considered in areas surrounding the Local Activity Centre.
- Medium Density housing Centre must front the Local Activity Centre to increase connectivity and surveillance of the centre.
- Rear loaded allotments should be encouraged adjacent to the Local Activity Centre where practicable.
- High front fences must not be adjacent to the Local Activity Centre to create an open and attractive streetscape that maximises passive surveillance.

Movement Network

Perricoota Road forms a key element in the movement network for the study area and will be the main arterial road servicing the site. The movement network will consist of arterial, sub arterial, collector and local roads and a series of walking, bicycle and shared paths (refer to Map 5).

Further detail of the proposed road movement network is provided in the *'Moama North West Residential Master Plan Traffic Engineering Assessment'* prepared by Traffix Group in December 2007.

Development Principles

- Perricoota Road and Cobb Highway will form the main arterial roads to the site.
- Twenty Four Lane and Martin Road will form the sub-arterial roads.
- Collector roads must be must be constructed in accordance with Map 5.
- Local roads may vary from those shown on Map 5 but must be designed to facilitate a grid network of streets and cul-de-sacs should be avoided where practicable.
- The carriageway width and road reservation must be constructed in accordance with Table 7.

Table 7. Road Network

Road Type	Carriageway Width	Road Reservation
Collector (without indented parking bays)	11 metres	22 metres
Collector (with indented parking bays)	7 metres	22 metres
Local	7.5 metres	20 metres
Access/Lane	5.5 metres	14 metres

Source: Traffix Group (2008)

- Footpaths must be provided on both side of all collector and local roads within the road reservation.
- Indented parking bays along Collector Roads should be encouraged near medium density residential and open space areas.
- Adequate car parking needs to be provided on-site for all new dwellings.
- Pedestrian and cycle paths through the designated open space area and shared space will enable connection between the Moama Recreation Reserve and Moama Sports Club.
- Primary walking and cycling paths must be provided in accordance with Map 5.
- Secondary walking and cycling paths must be developed during planning permit stage and provide connectivity with the primary linkages.
- Pedestrian and cycle connectivity must be accommodated for in the design of bridges or culverts over the Drainage/ Linear Open Space.

Shared Spaces

A shared space is proposed to provide connection with the Moama Recreation Reserve and Moama Sports Club from the Kiely Road Open Space Corridor (refer to Map 5). The shared space will integrate traffic movement (i.e. cars) with pedestrians and cyclists through traffic calming measures, creating a safer pedestrian and cyclist environment. Examples of Shared Spaces are provided in Figure 8.

The key element of a shared space involves removal of the kerb resulting in a shared surface streetscape. Removing or reducing traditional road elements such as traffic signs, markings and other instructions to drivers creates a space which is not designed for traffic. Other design elements such as 'shared space' signage and paving/ cobblestones are designed to reduce traffic speeds in these areas.

Development Principles

- The proposed shared space will provide connection between Moama Recreation Reserve and Moama Sports Club from the Kiely Road Open Space Corridor.
- A single level street pavement must be achieved for vehicles, pedestrians and cyclists (i.e. no kerb).
- Paving stones or cobblestones (or other appropriate materials) should be used in preference to bitumen on the street pavement.
- Signage must be located at either end of the shared space advising motorists to reduce speeds and to be aware of pedestrians and cyclists.
- Delineation between uses may be achieved by utilising varying pavement materials and colours. Typical white-line marking should be avoided.

Figure 8. Shared Spaces Examples

Acland Street, St Kilda

- Kerb removed. One level for pedestrians, cars, trams and bicycles.
- Minimal line markings used on road.
- Typical traffic signs are not visible.
- Development extends to the street frontage.

Haslach, Germany

- Kerb removed. One level for pedestrians, cars, trams and bicycles.
- Paving stones used as apposed to bitumen to reduce traffic speeds and indicate that this is not a typical road environment.
- Typical line markings not used.

Bendigo, Victoria

- Kerb removed. One level for pedestrians, cars, trams and bicycles.
- Paving stones used as apposed to bitumen to reduce traffic speeds and indicate that this is not a typical road environment.
- Typical line markings not used.

Source: www.theage.com.au, http://www.bdd-stadtplanung.de/sanierunghaslach.html

Allotment Design

The proposed road layout has been designed to encourage allotments which area oriented in a north-south manner. Where this cannot be achieved, east-west oriented allotments should be designed to ensure north facing windows can be achieved in new dwellings. This will typically mean that east-west oriented allotments will need to be wider than those oriented north-south.

Indicative allotment layouts have been provided (refer to Map 8) to show how this can be achieved within the Study Area. It is anticipated that the local road layout and allotment design will differ from that shown during the detailed design phase of development.

Development Principles

- Residential allotments are to be designed and oriented to maximise solar access. Where allotments cannot be oriented in a north-south manner, the width of the allotments must be sufficient to ensure solar access to north facing windows.
- Rear loaded allotments should be encouraged in medium density areas and where allotments face collector or arterial roads.
- It will need to be demonstrated that vehicle crossings and driveways for allotments on the south side of Kiely Road will not have a detrimental impact on the Native Grey Box Woodland. Rear loaded allotments may also need to be considered in this location.
- The allotment layout needs to ensure that significant vegetation on the land (i.e. Native Grey Box) will not be affected by the construction of a new dwelling.
- Allotments in the Residential (Transition) area must provide an appropriate interface between existing residential estates and new development.
- The allotment layout shown on Map 8 is indicative and subject to change at the subdivision stage.

11 Implementation of Master Plan

11.1 Staging of development

The Study Area has been divided into four stages of development (Immediate, Short Term, Medium Term and Long Term) that provide a logical sequencing of development based on the location and availability of roads and services. Staging will first generally occur northward from Perricoota Road and Boyes Road (Map 7).

Staging of development is generally dependant upon landholder aspirations, the existing vacant residential land and supply, the ability for land to be serviced, and proper and orderly planning principles.

Landholders for land east of the Lakeview Estate and Lot 10 Perricoota Road have indicated they are in a position to commence development in less than 5 years.

11.2 Proper and orderly planning

Rezoning the land south of Martin Road in the immediate or short term would be 'out of sequence' with the existing zoned land around the Lakeview Estate.

The area between Perricoota Road and the proposed Drainage/ Linear Open space is the most logical land for 'Immediate' rezoning. Land close to the Town Centre and land designated for the proposed Commercial (future) (to the south-east and the Recreation Reserve and Moama Sports Centre) may also commence immediately.

The remaining land marked short, medium and long term will develop outwards from this to maintain orderly development.

11.3 Land supply

The study area is approximately 243 hectares in area. Land use composition is illustrated in Table 8.

Table 8. Land Use Budget

Land Use	Area (ha)	% of Study Area
Drainage/ Open Space	29.6	12.2%
Shared Space	2.1	0.9%
Residential (Standard)	160	65.8%
Residential (Transition)	22	9.1%
Residential (Medium Density)	25	10.3%
Local Activity Centre	1.8	0.7%
Existing Road Reserve	2.5	1.0%
TOTAL	**243**	**100%**

Source: MacroPlan Australia (2009)

In order to calculate the residential land supply for the study area, a 20% provision for roads and services has been applied. As illustrated in Table 9, a total of 2,450 allotments can be achieved within the study area. Section 6.2 of this report outlines that there is demand for 95 allotments per year in Moama. As such, the study area creates approximately 25 years land supply. This indicates that rezoning the entire study area will result in a total land supply in excess of that required. In practice, however, land should be rezoned in a staged and orderly manner, or subject to demand.

Table 9. Total Land Supply

Residential Land	Gross Area (does not include open space)	Net Developable Area (assumed 20% Road and Services Contribution)	Density	Total Number of Lots
Standard	159.67ha	127.736 ha	14.5 lots/ha (550m^2)	1,852 lots
Transition	21.519ha	17.215 ha	12.3 lots/ ha (650m^2)	211 lots
Medium Density	24.234ha	19.387 ha	20 lots/ ha (400m^2)	387 lots
TOTAL	**205.423 ha**	**164.338 ha**		**2,450 lots**

Source: MacroPlan Australia (2009)

As illustrated in Table 10, rezoning the land identified as 'Immediate' would provide approximately 69.97 hectares of gross developable land (i.e. this does not include the land identified for "Drainage/ Open Space"). Assuming a 20% road and services contribution, it is estimated that this stage will yield approximately 818 allotments based on the nominated density for each residential area. Assuming a take up rate of 95 allotments per year, this equates to 8.6 years supply.

Table 10. Land Supply (Immediate)

Residential Land	Gross Area (does not include open space)	Net Developable Area (assumed 20% Road and Services Contribution)	Density	Total Number of Lots
Standard	37.92ha	30.34ha	14.5 lots/ha (550m^2)	439 lots
Transition	21.52ha	17.22ha	12.3 lots/ ha (650m^2)	211 lots
Medium Density	10.53ha	8.42ha	20 lots/ ha (400m^2)	168 lots
TOTAL	**69.97ha**	**55.98**		**818 lots**

Source: MacroPlan Australia (2009)

It is estimated that a total of 316 allotments will result from the development of the land identified as 'short term' (Table 11). Assuming a take up rate of 95 allotments per year, this equates to 3.3 years supply.

Table 11. Land Supply (Short Term)

Residential Land	Gross Area (does not include open space)	Net Developable Area (assumed 20% Road and Services Contribution)	Density	Total Number of Lots
Standard	18.47ha	14.78	14.5 lots/ha (550m^2)	214 lots
Transition	-	-	12.3 lots/ ha (650m^2)	-
Medium Density	5.13ha	4.1	20 lots/ ha (400m^2)	102 lots
TOTAL	**23.6ha**	**18.88**		**316 lots**

Source: MacroPlan Australia (2009)

Note: These land supply estimates are subject to change as the density of allotments is subject to change in order to comply with the Murray LEP and amendments to this plan.

11.4 Servicing

The Moama West Infrastructure Development report prepared by Earth Tech and Murray Shire in 2005 provides the necessary information regarding Stormwater Drainage and Sewerage for the area. Prior to development commencing a servicing assessment which demonstrates the land can be serviced appropriately will need to be provided to the satisfaction of Council. The location of existing service infrastructure is provided in Map 9. The following is a summary of the servicing matters.

Drainage

A natural drainage depression traverses the site from the north-west corner to the south-east, which also connects to the existing subdivision (south-west). This area has the potential for passive recreation uses, and provides a link through to the recreation reserve in the south-east.

Dwellings constructed around this area will be required to be elevated to ensure that they are clear of the 1 in 100 year flood level. A new outlet will also be required for a 1 in 100 year flood event to direct excessive stormwater water back towards the Murray River. Water has previously been retained and absorbed on-site. An existing culvert under Perricoota Road links an irrigation dam with the Murray River.

Options should be investigated for the capture and re-use of water on site, and within the recreation reserve adjoining the subject site to the south-east.

Sewerage

New residential development to the north of the recreation reserve will be required to contribute towards a new mains pump for sewerage purposes. Two (2) additional pumps will be required within the new residential area.

In addition, it has been identified that a major pump station will be required to the north-west of the study area.

Water Supply

Existing and proposed filtered water pipes as discussed in Section 7.4 will enable the short and medium term development. There may be the need to create an additional pump from the river for external watering.