coomes consulting

Local Environmental Study

"Kooyong Park"
Old Deniliquin Road,
Moama

February 2008

Prepared by Coomes Consulting Group Pty Ltd

Coomes Consulting Group Pty Ltd ABN 55 050 029 635 ACN 050 029 635
445 Townsend Street PO Box 3400 Albury NSW 2640 Australia
T 61 2 6051 1300 **F** 61 2 6041 2986 coomes.com.au
A subsidiary of Downer EDI

Contents

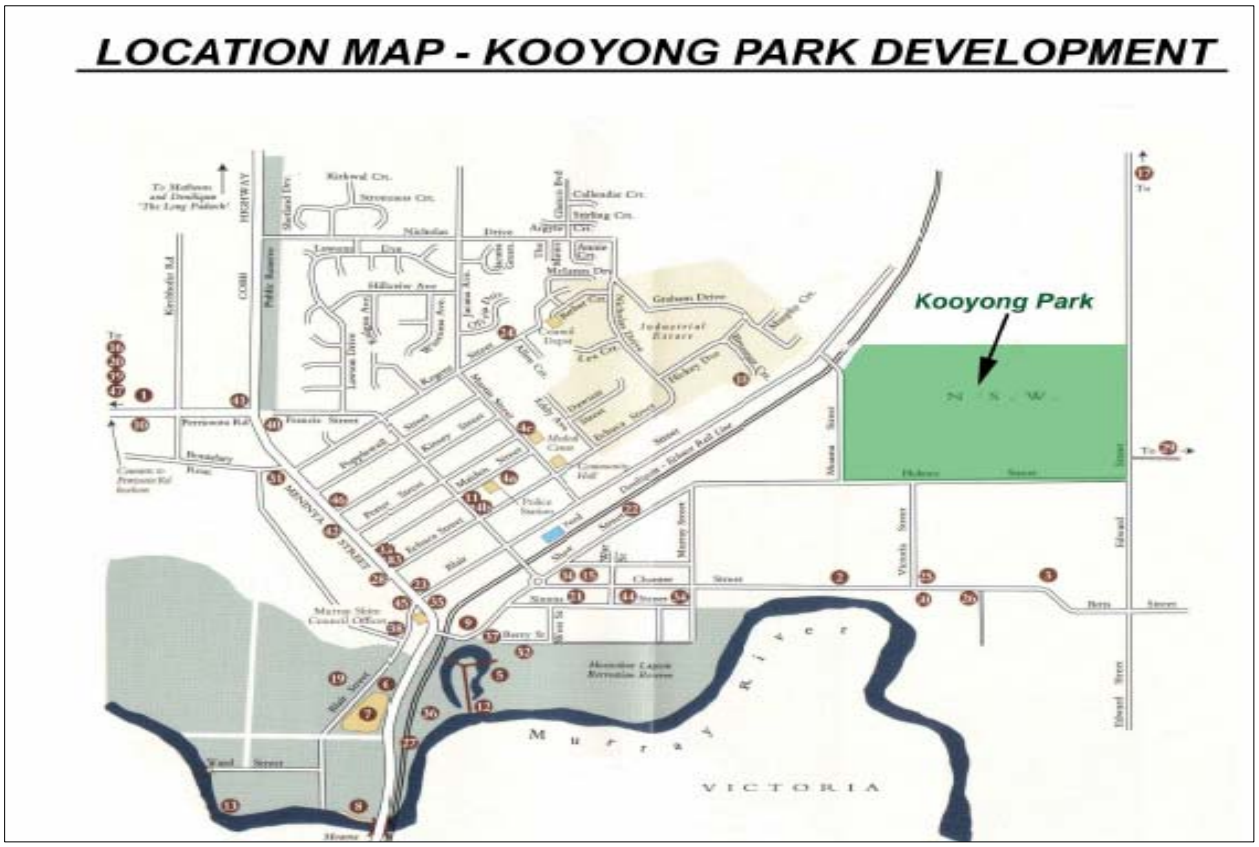
Coomes Consulting Group Pty Ltd ABN 55 050 029 635 ACN 050 029 635
445 Townsend Street PO Box 3400 Albury NSW 2640 Australia
T 61 2 6051 1300 F 61 2 6041 2986 coomes.com.au
A subsidiary of Downer EDI

Coomes Consulting Group Pty Ltd ABN 55 050 029 635 ACN 050 029 635
445 Townsend Street PO Box 3400 Albury NSW 2640 Australia
T 61 2 6051 1300 **F** 61 2 6041 2986 coomes.com.au
A subsidiary of Downer EDI

Attachments:
Attachment A: Existing Levels of Site
Attachment B: Proponent's submission
Attachment C: Correspondence

1 Introduction

This report is an Environmental Study commissioned by Murray Shire Council (the Council) on behalf of, and in regard to, land known as 'Kooyong Park', located on Old Deniliquin Road, Moama.



The Brief issued by Council relating to the commissioning the Study, states the Study is;

> *"To be prepared for the purposes of assessing the appropriateness of land for rezoning."*

The Local Environmental Study has been prepared to:

- Identify the constraints and opportunities of the site for conservation and development.
- Assess the implications of urban or quasi-urban development of the site having regard to:
  - environmental sustainability
  - social implications
  - likely environmental impact and environmental management strategies required to reduce identified impacts; and
  - infrastructure and service requirements of development.

The aim of the Local Environmental Study is to provide sufficient and objective information to enable a decision to be made as to the best use of the land within the study area.

This may be achieved by identifying the following matters:

- all relevant constraints and opportunities; and
- any special character or functions associated with the Study area.

The following report has been structured to address each of the matters identified by Council as relevant to the Study.

The contents of each section of the report is summarised as follows:

Section 1 provides an introduction to the report, including the objectives of the Study and the environmental matters to be discussed.

Section 2 describes the Study area, including its context in relation to its siting, nearby urban areas and the surrounding areas.

Section 3 presents the statutory and strategic framework within which the environmental issues and outcomes are to be addressed.

Section 4 provides an assessment of the environmental issues required to be addressed by the Brief of Council.

Section 5 presents the outcomes of the Study.

Section 6 draws conclusions based on the outcomes and subsequent recommendations to Council.

The report has been prepared based on the information supplied by Council, detailed specialist reports, information sourced from public authorities, information supplied by the proponent and a detailed inspection and field work in the locality.

The report is presented to Council for consideration and action.

2 Land Description and Ownership

2.1 National and State Context

The Murray Shire covers an area of over 4,300km² and is almost totally surrounded by the Murray River and its tributaries.

The Shire is home to over 7,000 residents and its location, on the closest point of the Murray River to Victoria's capital city Melbourne, provides for an area booming with tourism, development, industry, and new residents.

The 2007 Australian Bureau of Statistic's annual Estimated Resident Population Publication for Local Government Areas presents Murray Shire as the fastest growing Local Government Area in NSW. In 2005 – 2006 Murray Shire recorded a growth rate of 4.1%, and the Shire has experienced a consistent growth rate over the past 15 years which has sustained an average growth rate of 2.3% since the year 2000.

The Shire's main settlement, Moama (together with her Victorian neighbour Echuca), services a community of approximately 20,000 people as well as approximately two million visitors who travel to the area every year.

2.2 Regional Context

The Cobb Highway joins the Northern Highway and Murray Valley Highway at Echuca-Moama. The highways form a portion of the most direct road transportation route between Melbourne and Brisbane.

2.3 Local Context

The site is located approximately 1 km east of the Cobb Highway on the periphery of the Moama Township.

Echuca-Moama has well developed infrastructure and is readily accessible to existing and emerging employment opportunities and to the other regional centre of Shepparton and tourist developments along the river.

With regional population and employment growth, increased household budgets for retail spending and increased mobility, indications are that Echuca-Moama is evolving into a sub-regional/regional centre.

2.4 Subject Site

The site is bordered by the Moama-Deniliquin railway corridor and Moama Street to the west and the Old Deniliquin Road to the east. To the south of the site is Holmes Street.

The total area of the freehold property is approximately 45.64ha.

The site is within the Murray Catchment Management Authority region.

The land titles encompassed by this study, as supplied by Council are:

- Lots 220-223 DP751152;
- Lots 1-18 Section 7 DP758686;
- Lot 5 Section 6 DP758686;
- Lot 3 Section 14 DP658656;
- Lots 3-8 Section 48 DP758656;
- Lots 3-8 Section 49 DP758656;
- Lots 3-8 Section 66 DP758656;
- Part Lot 2 DP1078090; and
- Lot 1 DP1078090.

During the preparation of this study, however, the proponent advised that the title distribution is such that the land is now held in four titles:

- Lot 1 DP1078090 (approx 6.3 ha – north east corner of property)
- Lot 194 DP 751152 (approx 23 ha)
- Lot 1 DP42525 (a 30 metre wide strip of land on northern border of property). This parcel of land appears on the same certificate of title as Lot 194
- Lot 1 DP 1098204 (approx 16.34 ha – the land on the southern side of the property where old titles have been consolidated and issued in a Certificate of Title dated May 2007)

2.5 Ownership

The ownership of the land is recorded in the name of Ulamba Pty Ltd, of which Roger O'Farrell is listed as the Director and Judith Ann O'Farrell, as the Secretary.

2.6 Land Use History

The land, along with adjoining lands, has for many years been utilised for agricultural purposes.

The land was originally cleared for farming, likely around the 1870's as it is part of old original "Moama' pastoral property.

In recent times the whole property has been laser leveled and is currently utilized to produce irrigated hay.

As such, the site is now a highly altered landscape and there are no irregular geological features on the land.

The plan showing onsite levels and existing improvements for the site is attached to this study.

The property, whilst much reduced in size from the original holding, is still being maintained as a farm; however it would now appear to be much too small a parcel of land to be a commercially viable agricultural enterprise.

2.7 Zoning

The land is currently zoned as General Rural 1 (a) under the provisions of the Murray Shire Local Environmental Plan 1989.

The entire nominated site is within the area subject to Murray Regional Plan No 2.

2.8 Consultation with Public Authorities

In the preparation of this Study the following Public Authorities have been consulted:

- NSW Department of Planning
- NSW Department of Environment and Climate Change
- Victorian Department of Sustainability and Environment
- NSW Department of Primary Industry
- NSW Department of Water and energy
- Murray Catchment Authority
- Murray Darling Basin Commission
- NSW Department of Lands
- NSW Department of Natural resources
- NSW Environmental Protection Authority
- NSW Department of Housing
- NSW Rural Fire Service
- Moama Aboriginal Land Council
- Telstra Operations and Forecasting & Capacity Planning
- Origin Energy Asset Section
- Country Energy

3 Background to the Proposal

3.1 The Proposal

As previously noted the existing site is currently use for agricultural pursuits, namely irrigated hay.

However, the property is too small to be a viable agricultural enterprise. As a consequence the proponent seeks to have a zoning whereby the site may be redeveloped for the purpose of residential and tourism/commercial type uses.

Photo 1: Site from corner of Holmes Street and Old Deniliquin Road, looking northwest

3.2 Circumstances of the matter coming before Council

The owners of the land have for a number of years sought rezoning to allow residential and associated development.

In a letter to Council's consultants in June 2006 the proponent stated:

> *In a letter to the General Manager of Murray Shire dated 26th May 2005, on behalf of my family, I formally requested a parcel of land be included in the new LEP and have the zoning on it changed. As per our conversation, attached is a map showing the location of the land (bounded by the green line) and a copy of the 'mudmap' we provided to the Murray Shire.*
>
> *The map broadly outlines what we wish to do with our land. FYI, our first contact with the Shire on this matter was in February 2003.*
> *Our projected use of the land is a combination of tourism and residential. Brian Harland has suggested applying to have the zoning of the land changed to "Multi-use". Each of the 'Enviro Communities' is anticipated to have 50-60 residential dwellings. We are also looking to develop approximately 50 (2,000 square metre) residential 'Urban Blocks' bounded by Moama St, Holmes St and Old Deniliquin Road. The 'tourism' aspect of the development is anticipated to contain a restaurant/function centre and some tourist accommodation. We plan to focus the whole development around a 'sustainable environmental' theme.*
>
> *Over the past 15 months, I have met with the Shire three times to discuss this project. …….. Would you please include our rezoning request in the current LEP planning process you are undertaking.*

In March 2007 the owners of the land wrote to Council's consultant, Habitat Planning, providing the following information:

> *Originally we flagged our desire to the Shire to rezone the parcel of land detailed approximately three years ago. Since that time we have had a number of meetings with Shire personnel, provided the Shire with a range of associated documentation and had a large amount of related correspondence. This Brief builds on, and fleshes out, the information we have provided to Shire staff over these years.*
>
> *We believe that this land meets the necessary base criteria for being re-gazetted as Residential. We also wish to initiate a series of innovations, compared to other developments in the Murray Shire, which we strongly feel the upcoming LEP should identify as offering special opportunities for adding value to the community.*
>
> *Part of the land closest to Moama currently has separate 45 titles, which include 15 existing building permits. We are in the process of consolidating all these titles which will give us a blank canvas to plan for future development configurations.*

3.3 Proponent's Proposed Use

The proponent states that subject to an appropriate rezoning the use of the site would be:

> *TOURISM AND HOSPITALITY*
> *At the heart of the proposed development is a restaurant with function facilities and potentially tourist accommodation. The focus of this facility will be to be a 'Region Produce Centre of Excellence'. Its goals will be to engage and encourage high quality organic food and drink producers in our region. It will provide a mechanism and a platform to market the best of the region's products to domestic and international markets. It will also encourage new producers and provide them with support and access to a market. The facility will show case product, serve it at the restaurant and provide an outlet for its purchase by the public.*
>
> RESIDENTIAL DEVELOPMENT
>
> *A range of different land and lifestyle packages are included in the proposed development. Approximately 170 blocks with separate titles are planned. At one end of the scale will be generous housing blocks (4,000 sq metres +) with rural or water aspects. At the other end of the spectrum, low maintenance, high quality dwellings will be offered. These are dwellings planned around open communal areas, so owners have access to a full range of services, without the associated maintenance difficulties. These communal areas are anticipated to be open parks, with shared facilities such as a tennis courts, bbq areas and a community sheds and gardens. Similar dwellings will also be located around the restaurant complex grounds. (*A concept plan was enclosed*). This plan is in the process of being modified to increase open green spaces and will be further modified to incorporate input from Council.*

3.4 Previous dealings with Council

As it will be noted the owner of the land has been in ongoing discussion with both Council officers and planning consultants for a number of years over the future zoning of the land.

Following a presentation to Council on 15 May 2007 the Council resolved to support the proposal in principle (subject to a detailed site specific flood study proving the land is suitable for urban development) and amend the Strategic Land Use Plan to indicate such support.

The proposed concept development plan is shown at Figure 1, below.

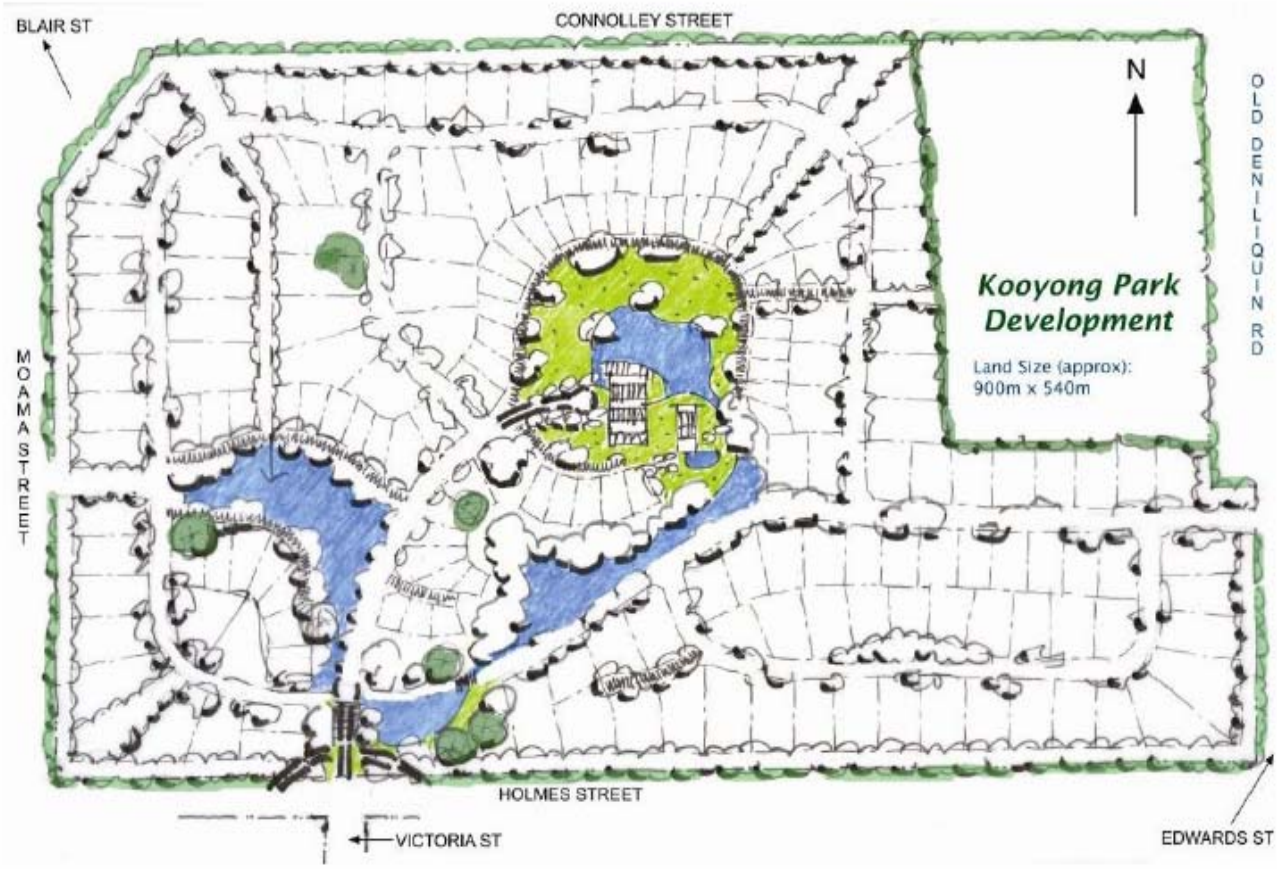


Figure 1: Site concept development plan

4 Planning Legislation

4.1 State legislation

The Environmental Planning and Assessment Act 1979 (the Act), as amended, outlines the process to be engaged in if an amendment of the Local Environmental Plan is to be considered.

The Act establishes a protocol for planning legislation descending from the principle Act through State Environmental Planning Polices and Ministerial Directions to Regional Plans and Local Environmental Plans.

The introduction of the Standard Instrument (Local Environmental Plans) Order 2006 (as amended 14 December 2007) requires that all Local Environmental Plans adopt a common state wide mandatory methodology whilst retaining some scope for the introduction of a "local flavour" by the inclusion of optional provisions.

The Council has a series of local planning initiatives underpinning its Local Environmental Plan. The Council's strategic studies, development control plan and local studies provide guidance to the preparation of documentation of any request for a rezoning.

4.1.1 Environmental Planning and Assessment Act 1979

The relevant section of the Act relating to the undertaking of Local Environmental Studies is Section 57.

Section 57 of the Act states:

57 Preparation of environmental study

(1) Where a council decides to prepare a draft local environmental plan or is directed to do so by the Minister under section 55, it shall prepare an environmental study of the land to which the draft local environmental plan is intended to apply.

(2) A council shall prepare an environmental study in accordance with such specifications, if any, relating to the form, content and preparation of the study as have been notified to the council by the Director-General and are then applicable.

(3) (Repealed)

(4) The environmental study referred to in subsection (1) shall be prepared with regard to such matters, relating to the environment of the area to which the draft local environmental plan is intended to apply, as the council, subject to the specifications, determines.

(5) Where, in relation to a request or submission made by or on behalf of a person to a council, an environmental study referred to in subsection (1) of particular land is prepared by the council for the purposes of a draft local environmental plan to enable the carrying out of development on the land, the council may, subject to and in accordance with the regulations, recover the costs and expenses,

determined in accordance with the regulations, incurred in the preparation of the environmental study, from the person.

4.1.2 State Environmental Planning Policies

In preparing any planning report on land and proposed development it is a requirement that the relevant State Environmental Planning Policies be considered in determining a stance on the proposal under consideration.

The State Environmental Planning Policies which may directly affect the proposed development would be:

- SEPP1 Development Standards
- SEPP (Infrastructure) 2007
- SEPP 22 Shops and Commercial Premises
- SEPP 44 Koala Habitat Protection

4.1.3 Section 117 (2) - Ministerial Directions

In preparing any planning report on land and proposed development it is also a requirement that the relevant Ministerial Directions be considered in determining a stance on the proposal under consideration.

The list of the Ministerial Directions, as at December 2007 is:

1. **Employment and Resources**
   1.1 Rural Zones
   1.2 Mining Petroleum and Extractive Industries
   1.3 Oyster Industries

2. **Environment and Heritage**
   2.1 Environmental Protection Zones
   2.2 Coastal Protection
   2.3 Heritage Conservation
   2.4 Recreational Vehicle Areas

3. **Housing Infrastructure and Urban Development**
   3.1 Residential Zones
   3.2 Caravan Parks and Manufactured Home Estates
   3.3 Home Occupations
   3.4 Integrating Land Use and Transport
   3.5 Development Near Licensed Aerodromes

4. Health and Risk

4.1 Acid Sulfate Soils
4.2 Mine Subsidence and unstable Land
4.3 Flood Prone Land
4.4 Planning for Bushfire Protection

5. Regional Planning

5.1 Implementation of Regional Strategies
5.2 Sydney Drinking Water Catchments
5.3 Farmland of State and Regional Significance on the NSW Far North Coast
5.4 Commercial and Retail Development along the Pacific Highway, North Coast
5.5 Development in the vicinity of Ellalong, Paxton and Millfield (Cessnock LGA)
5.6 Sydney to Canberra Corridor
5.7 Central Coast
5.8 Second Sydney Airport: Badgerys Creek

6. Local Plan Making

6.1 Approval and Referral requirements
6.2 Reserving Land for Public Purposes
6.3 Site Specific Provisions

4.2 Murray Regional Environmental Plan No 2 – Riverine Land

In preparing any planning report on land and proposed development it is a requirement that any relevant Regional Environmental Planning Plan or Policy be considered in determining a stance on the proposal under consideration.

The entire nominated site is within the area subject to Murray Regional Plan (MREP) No 2.

The objectives of the MREP are:

(a) "*to ensure that appropriate consideration is given to development with the potential to adversely affect the riverine environment of the River Murray, and*
(b) to establish a consistent and coordinated approach to environmental planning and assessment along the River Murray; and
(c) to conserve and promote the better management of the natural and cultural heritage values of the riverine environment of the River Murray."

The relevant planning principles underpinning the MREP are:

Flooding

- Where land is subject to inundation by floodwater:
  - (a) *the benefits riverine ecosystems of periodic flooding;*
  - (b) *the hazard risks involved in developing that land;*
  - (c) *the redistributive effect of the proposed development on floodwater;*
  - (d) *the availability of other suitable land in the locality not liable to flooding;*
  - (e) *the availability of flood free access for essential facilities and services;*
  - (f) *the pollution threat represented by any development in the event of a flood;*
  - (g) *the cumulative effect of the proposed development on the behaviour of floodwaters and*
  - (h) *the cost of providing emergency services and replacing infrastructure in the event of a flood.*
- Flood mitigation works constructed to protect new urban development should be designed and maintained to meet the technical specifications of the Department of Water Resources.

Landscape

- Measures should be taken to protect and enhance the riverine landscape by maintaining native vegetation along the riverbank and adjacent land, rehabilitating degraded sites and stabilising and revegetating riverbanks with appropriate species.

River related uses

- Only development which has demonstrated, essential relationship with the River Murray should be located in or on land adjacent to the River Murray. Other development should be set well back from the bank of the River Murray.
- Development which would intensify the use of riverside land should provide public access to the foreshore.

Settlement

- New or expanded settlements (including rural-residential subdivision, tourism and recreational development) should be located;
  - (a) *on flood free land;*
  - (b) *close to existing services and facilities; and*
  - (c) *on land that does not compromise the potential of prime crop and pasture land to produce food or fibre*.

4.3 Murray Region Strategy

The MREP is currently under review and a discussion paper released detailing the issues arising from the review.

The review has identified a number of options for regional planning in the Murray region, including the repeal of the MREP and the requirement for specific mandated provisions to be included in LEPs for Council areas in the Murray region.

Consequently, the Department of Planning is currently preparing the Murray Region Strategy. It is anticipated that this Strategy will consider issues in a regional context, providing strategic objectives and environmental considerations for LEPs in the Murray region, rather than specific development controls for developments in the area.

4.4 Local Planning

Local planning and land use decision making within Murray Shire are primarily controlled by the provisions of the Murray Local Environmental Plan 1989, as amended.

4.4.1 Murray Local Environmental Plan 1989

The general aims of this plan are:

- *to encourage the proper management, development and conservation of natural and man made resources within the Shire of Murray by protecting, enhancing or conserving:*
  ……
  2 (a) (iv) areas of high scenic or recreational value

- *to replace the existing planning controls with a single local environmental plan to help facilitate growth and development of the Shire of Murray in a manner which is consistent with the aims specified in paragraph (a) and which:*
  …..
  2 (b) (vi) provides for orderly development of tourist activities

- *Clause 20 Development along Arterial roads*

- *Clause 30 Development along Rivers*

4.4.2 Murray Development Control Plan

To assist in providing the community with indications as to Council's preferred approach to acceptable standards for development within the Murray Shire, Council has adopted the Murray Development Control Plan.

In any prospective development of the land, should a rezoning be supported, the following Chapters of the Development Control Plan could be relevant:

- Chapter 1 Urban and Village Zones
- Chapter 2 Tourist Development
- Chapter 6 Low Density Residential Land
- Chapter 7 Flood Prone Land

4.5 Strategic Directions

4.5.1 Strategic Land Use Plan for the Murray Shire

Murray Shire Council has adopted a Strategic Land Use Plan (SLUP) for the Shire. The plan will be utilised to underpin Council's strategic planning decisions.

The following extract from the Strategic Land Use Plan is relevant to the site:

> ***Flood prone land***
> *Being located adjacent to the Murray River, it is perhaps not surprising that flooding is an issue in Moama. The map taken from the 1999 Moama Floodplain Management Study and other known flood information for land west of Twenty-four Lane [sic]. The map shows the extent and nature of flooding expected in a 1 in 100 year average recurrence interval or ARI for rainfall. The map shows land to the east of the Cobb Highway and the township as substantially affected by flooding whereas to the west the floodplain is less extensive.*
>
> *Whilst some areas within the floodplain are shown on the map as 'flood free' courtesy of rural levees, these are not regarded as suitable for urban development as the levees are not designed, constructed or intended to guarantee flood protection in a major event.*
>
> *A substantial levee bank around the eastern edge of the Moama urban area protects the town from major flooding events. Development east of this levee is a mix of old buildings relating to Moama's past, newer residences built with floors above the flood level and tourist establishments. More recently proposed developments within the floodplain have been subjected to greater scrutiny, particularly in regards to water and sewer infrastructure as well as the impact of flooding on access and buildings. Development to the west of Moama is generally contained above the flood level.*
>
> *The SLUP responds to this issue by not identifying any land in Moama below the 1 in 100 year flood level and not protected by the town flood levee as suitable for future urban development. In regards to the area east of the Moama levee this effectively means maintaining existing and approved proposals (including several major tourist developments) with no further intensification.*

4.6 Standard Instruments (Local Environmental Plans) Order 2006

With the gazettal of the Standard Instruments (Local Environmental Plans) Order, the form and content of Local Environmental Plans has become prescribed.

Murray Shire Council, along with most local authorities within the state, is in the course of preparing a principal Local Environmental Plan for the local government area. Any decision to proceed beyond the adoption of a Local Environmental Study would require that a draft Local Environmental Plan comply with the form and content of the Order.

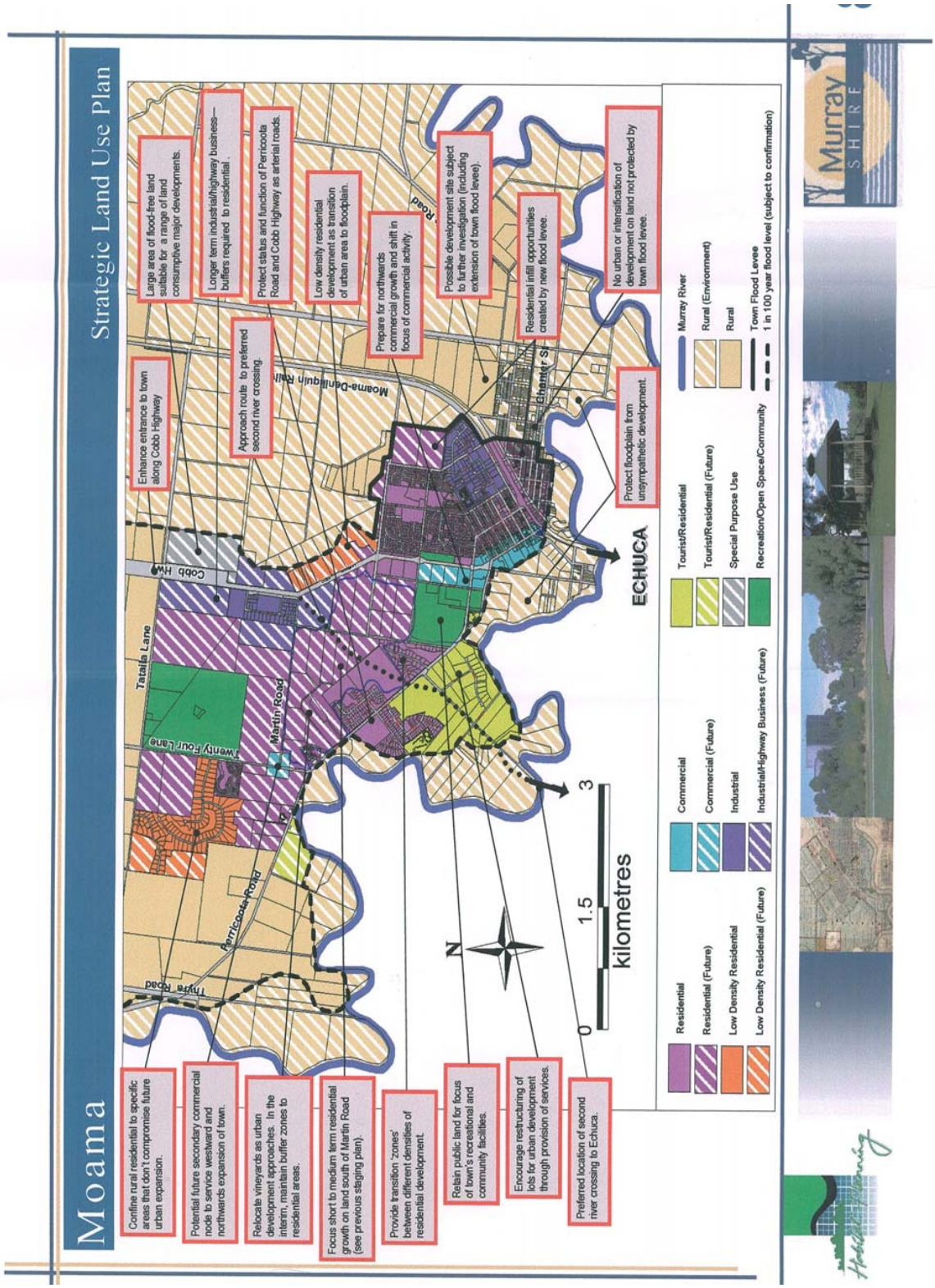


Figure 2: Strategic Land Use Plan - Moama

4.6.1 Shire Wide LEP

As a precursor to the preparation of the Local Environmental Plan, Council has undertaken its strategic studies which have culminated in the adoption of the SLUP.

Indications are that the new draft instrument will be finalised in 2009.

Notwithstanding this time frame, any review of environmental issues associated with the subject site should assess the proposed development against the standard criteria so as to ensure that if Council were of a mind to proceed to a draft plan, the proposal would be consistent with the Standard Instrument land use tables and provisions.

4.6.2 Dictionary Definitions

The Standard Instrument (Local Environmental Plans) Order 2006, as amended on 14 December 2007, sets down specific definitions of Land Use. The definitions of relevance to this Study are:

> ***dwelling*** means a room or suite of rooms occupied or used or so constructed or adapted as to be capable of being occupied or used as a separate domicile.
> ***dwelling house*** means a building containing only one dwelling.
> ***rural worker's dwelling*** means a dwelling, ancillary to a dwelling house on the same landholding, used as the principal place of residence by persons employed for the purpose of agriculture or a rural industry on that land.
> ***Lot Size Map*** means the [Name of local government area] Local Environmental Plan [Year] Lot Size Map
> ***waterbody (natural)*** means a natural body of water, whether perennial or intermittent, fresh, brackish or saline, the course of which may have been artificially modified or diverted onto a new course, and includes a river, creek, stream, lake, lagoon, natural wetland, estuary, bay, inlet or tidal waters (including the sea).

4.6.3 Appropriate zone to address recommended use

Having assessed the site, and reviewed all available data and studies, it would appear that the following zones from the Standard Instrument (Local Environmental Plans) Order 2006, as amended 14 December 2007, could be utilised for the future development of the site. The land use tables as they appear in the Standard Instrument are detailed below.

Zone RU2 Rural Landscape
Direction.
The following must be included as either "Permitted without consent" or "Permitted with consent" for this zone:
Environmental protection works
Farm buildings
Roads

1 Objectives of zone

- To maintain the rural landscape character of the land.
- To provide for a range of compatible land uses, including extensive agriculture
- (additional objectives may be included in the zone at the end of the listed objectives to reflect the particular objectives fro the site, provided that they are consistent with the core objectives listed above.)

2 Permitted without consent

- Extensive agriculture
- (additional specified land uses may be added to the list of development that is permitted in the zone.)

3 Permitted with consent

- Dwelling houses
- (additional specified land uses may be added to the list of development that is permitted in the zone.)

5. Prohibited

- (Specified land uses may be included as prohibited in the zone.

and/or

Zone RU5 Village
Direction.
The following must be included as either “Permitted without consent” or “Permitted with consent” for this zone:
Roads

1 Objectives of zone

- To provide for a range of land uses, services and facilities that are associated with a rural village.

2 Permitted without consent

- Home occupations

3 Permitted with consent

- Child care centres; Community facilities; Dwelling houses; Neighbourhood shops; Places of public worship; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Schools

4 Prohibited

- (Specified land uses may be included as prohibited in the zone.

and/or

Zone E4 Environmental Living

Direction
The following must be included as either "Permitted without consent" or "Permitted with consent" for this zone:

- Environmental protection works
- Roads
- Home industries may (but need not) be included as permitted with consent.

1 Objectives of zone

- To provide for low-impact residential development in areas with special ecological, scientific or aesthetic values.
- To ensure that residential development does not have an adverse effect on those values.

2 Permitted without consent

- Home occupations

3 Permitted with consent

- Dwelling houses

4 Prohibited

- Industries; Service stations; Warehouse or distribution centres; Any other development not specified in item 2 or 3

The zone/s considered to be most appropriate are identified in the conclusion of this Study, having regard to the environmental considerations contained in this Study, the intent of the zones and the development concept prepared by the owner of the land.

4.6.4 Relevant Specific Clauses of Standard Instrument

The Standard Instrument contains specific clauses that may be used to control and guide development on specific lands within a zone. To establish a minimum allotment size for subdivision it would be necessary to utilise the following clauses:

4.1 Minimum subdivision lot size [optional]

(1) The objectives of this clause are as follows:
(a) [*set out objectives of the clause*]

(2) This clause applies to a subdivision of any land shown on the Lot Size Map that requires development consent and that is carried out after the commencement of this Plan.

(3) The size of any lot resulting from a subdivision of land to which this clause applies is not to be less than the minimum size shown on the Lot Size Map in relation to that land.

Direction
An exception to the minimum size shown on the Lot Size Map may be provided in certain circumstances, for example, in the case of land that is to be used for attached dwellings.

(4) This clause does not apply in relation to the subdivision of individual lots in a strata plan or community title scheme.

4.2 Rural subdivision [compulsory if clause 4.1 adopted and land to which Plan applies includes land zoned RU1, RU2, RU4 or RU6]

(1) The objective of this clause is to provide flexibility in the application of standards for subdivision in rural zones to allow land owners a greater chance to achieve the objectives for development in the relevant zone.

(2) This clause applies to the following rural zones:
(a) Zone RU1 Primary Production,
(b) Zone RU2 Rural Landscape,
(c) Zone RU4 Rural Small Holdings,
(d) Zone RU6 Transition.

(3) Land in a zone to which this clause applies may, with consent, be subdivided for the purpose of primary production to create a lot of a size that is less than the minimum size shown on the Lot Size Map in relation to that land.

(4) However, such a lot cannot be created if an existing dwelling would, as the result of the subdivision, be situated on the lot.

(5) A dwelling cannot be erected on such a lot.

Note. A dwelling includes a rural worker's dwelling (see definition of that term in the Dictionary).

4.6.5 Possible Clauses to acknowledge Flood Liable status of the site

Given the flood liability that may affect some, if not all, of the site, the insertion of an appropriate local clause into any new instrument would be necessary, it being noted that the Standard Instrument does not contain a mandatory clause for this development constraint.

The clause could consist of either:

Development on land in flood referral areas

(1) A person must not carry out development on land within a flood referral area except with the consent of the consent authority.

(2) The consent authority may consent to development on land within a flood referral area only if it is satisfied that:

(a) the development would not:

(i) adversely affect the efficiency of a floodway, or

(ii) unduly restrict the capacity of a floodway to carry and discharge floodwaters, or

(iii) significantly increase the level of flooding on other land in the vicinity, or

(iv) result in risk to life or human safety, to property or to the environment, in the event that the land or adjoining land is inundated by flood water, and

(b) any portion of any building or structure proposed to be located in a position where it is likely to be subject to inundation will be built from flood-compatible materials and will be designed to be capable of withstanding flooding, and

(c) satisfactory arrangements are made for access to the development during a flood.

(3) Nothing in this clause limits or restricts the authority of the consent authority to consent to the carrying out of water control measures.

(4) In considering any application to carry out development on land in a flood referral area, the consent authority must have regard to the principles and guidelines contained in the current *Floodplain Management Manual, Development Guidelines*, prepared by the New South Wales Government.

(5) In this clause:
Flood referral area means the area identified on the Flood Referral Map.
Flood Referral Map means the Murray Local Environmental Plan 2009 Flood Referral Map.

In the alternative, a draft clause also suitable for flood liable land could read as:

Waterbodies and riparian land

(1) The objectives of this clause are:
- (a) to ensure that development in or adjoining waterbodies takes account of impacts on the environment and other users of the waterbodies, and recognises any relevant management plans for those areas, and
- (b) to maintain the relative stability of the bed and banks of waterbodies, and
- (c) to protect and enhance water quality and aquatic ecosystems, including natural wetlands, and
- (d) to maintain and, where possible, enhance the ecological and water quality functions of riparian vegetation, and
- (e) to protect the scenic and cultural heritage values of waterbodies and riparian land, and
- (f) to facilitate public access to, and use of, waterbodies where the access does not compromise the above objectives.

(2) This clause applies to development within waterbodies and on riparian land.

Note. See Dictionary for definitions of "waterbody".

(3) Development for the purpose of the following must not be carried out on land to which this clause applies:
- (a) abattoirs,
- (b) airports,
- (c) animal boarding or training establishments,
- (d) animal cemeteries,
- (e) biosolid waste applications,
- (f) cemeteries,
- (g) composting facilities,
- (h) intensive livestock agriculture,
- (i) land fill,
- (j) liquid fuel depots,
- (k) materials recycling depots,
- (l) sawmills,
- (m) stock and sale yards,
- (n) waste management facilities or works,
- (o) wool scouring plants.

(4) Before granting consent to development on land to which this clause applies, the consent authority must be satisfied that the proposed development will be consistent with achieving the objectives of this clause. For that purpose the consent authority must consider the following matters:
- (a) the recommendations in any relevant management plans of which it is aware (such as water management or wetland management plans) applying to the waterbody,
- (b) whether the development needs to be in or adjoining a waterbody and whether there is a better location for it,

(c) any effect of the development on the relative stability of the bed and banks of the waterbody, whether on the site, upstream or downstream,
(d) any effect of the development on water quality or the functions of aquatic ecosystems (such as habitat and connectivity),
(e) any effect of the development on riparian vegetation, including its ecological functions (such as habitat and connectivity) and water quality functions,
(f) any effect of the development on scenic and cultural heritage values,
(g) any effect of the development on public access and use of the
(h) waterbody and its foreshores, and whether any increase in access and use may have an adverse impact,
(i) whether the development would affect access to and use of the waterbody for commercial fishing and, if so, whether there is sufficient alternative access in the locality,
(j) whether the development will increase water extraction for domestic and stock supply and the impact of this extraction on stream flow,
(k) the likely impact of pests, such as biting midges or mosquitoes, on residents and visitors, and the environmental impacts of any measures used to control these pests,
(l) the need for specific measures to:
    i. minimise the clearing of native riparian vegetation associated with the development, and
    ii. protect and enhance the ecological functions (such as habitat and connectivity) of the waterbody and adjoining land, and
    iii. protect scenic and cultural heritage values, and
    iv. stabilise the bank or shoreline of the waterbody, without compromising natural processes of erosion and deposition, and
    v. rehabilitate riparian vegetation, including revegetation of cleared land to enhance the functions of the native vegetation, and
    vi. minimise the risk of water pollution, and
    vii. facilitate appropriate public access to the waterbody, and
    viii. limit or control access to the waterbody and its foreshores to avoid damage to sensitive areas, and
    ix. prevent any increase in extraction of water from the waterbody for domestic and stock uses, and
    x. ameliorate any identified impact of pests such as biting midges or mosquitoes.

Or the following clause:

Development on flood prone land

(1) The objectives of this clause are:
- (a) to maintain the existing flood regime and flow conveyance
- (b) capacity, and
- (c) to enable safe occupation of flood prone land, and
- (d) to avoid significant adverse impacts upon flood behaviour, and
- (e) to avoid significant adverse affects on the floodplain environment that would cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of the river bank/watercourse, and
- (f) to limit uses to those compatible with flow conveyance function and flood hazard.

(2) This clause applies to land shown as flood prone land on the [*Name of local government area*] Flood Prone Land Map.

(3) Development consent is required for the following:
- (a) subdivision of land,
- (b) filling and earthworks,
- (c) the erection of a building,
- (d) the carrying out of a work,
- (e) flood mitigation works,

on land to which this clause applies.

(4) Consent required by subclause (3) must not be granted unless the consent authority is satisfied that the development:
- (a) will not adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and
- (b) will not significantly alter flow distributions and velocities to the detriment of other properties or the environment of the floodplain, and
- (c) will enable safe occupation of the flood prone land, and
- (d) will not significantly detrimentally affect the floodplain environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of the riverbank/watercourse, and
- (e) will not be likely to result in unsustainable social and economic costs to the flood affected community or general community, as a consequence of flooding, and
- (f) is compatible with the flow conveyance function of the floodway, and
- (g) is compatible with the flood hazard within the floodway.

5 Land Use Issues

5.1 Purpose of proposed activity

Whilst no specific development proposal was advanced in the initial request for rezoning, the proponent seeks a higher order use than that currently envisaged unde the General Rural 1(a) zone of the current LEP.

During the course of the preparation of this document, the proponent has produced evidence that the matter has been the subject of intense and ongoing discussions with Council over a considerable period of time.

The proposed use has been identified as being urban in nature and extends to allowing some form of commercial activity on at least a portion of the land.

Given the current level of infrastructure available in the area and Council's adopted Land Use Strategy for the Shire in general, and Moama in particular, it is assumed that any future use of the site will depend to a large extent upon the availability of services and the demand for the intended use.

In determining whether to support the request for a rezoning, and in undertaking a review of the environmental factors which may affect any decision making on the request, it is necessary that the existing use of the site, and the site's advantages over surrounding sites, be reviewed.

5.2 Agricultural Quality of the land

The site is and has for many years been utilised for agricultural purposes.

The current operations upon the land yield cropped hay, after extensive irrigation resources have been utilised. The land has been laser levelled and provided with irrigation for this agricultural purpose.

Adjoining land is not utilised in this manner, and is not held in common ownership with the site.

The existing road patterns in the area are not amenable to site amalgamation beyond the boundaries of the subject site.

The agricultural classification of the land is not in dispute, but rather it is argued that owing to the site's limited area, the subdivisional activity in the immediate vicinity of the site, and the site's proximity to the township of Moama has resulted in the request to rezone, owing to the economic realities that have made farming in the area non viable and unsustainable in the longer term.

5.3 Flood liable land

The site is identified as being within land subject to inundation from the 1:100 year flood frequency.

It is noted that land with a lower level to the site, on immediately adjoining streets, has been successfully developed for Rural Living/ rural-residential and tourism purposes.

Whilst the issue of flooding, flood liable land and protective levies in the area, are addressed in detail in Section 9 of this report, it is suffice to state at this juncture that based on the level of information available; the advice from the relevant State instrumentality; and the re-contouring of the land that has occurred, it is contended that the issue of the flood liability of part of or all of the land should not, in itself, be of a determining weight in any decision making process concerning the rezoning of the land.

5.4 Alternative Land Uses

If the current request for a rezoning were not to be supported, a number of alternate uses could be advanced for the site.

It is noted that the land title configuration would allow a number of the titles comprising the land to be utilised for rural living activity. Adjoining and adjacent lands have been developed for these purposes, as well as tourism and semi industrial uses.

The adjoining land uses do not have a cohesive nature and appear to have resulted from a piecemeal approach to the area's development in the past.

Based on the findings addressed elsewhere throughout this report, a number of alternate higher order uses could be possible and should a rezoning not proceed for the site at this point in time, a detailed review of the applicability of the current zoning of the area should be undertaken so as to ensure a more holistic approach to the development of the East Moama area occurs in the future.

6 Surrounding Properties

6.1 Rural Lifestyle opportunities in the area

The site is located in close proximity to the town of Moama and the surrounding land use is reflective of the development that occurs on the periphery of urban areas in general. The existence of rural life style dwellings, tourist related developments, earthmoving businesses and rural enterprises reflects this pattern.

No particular form of development dominates the locality and the density of the surrounding development is such that it would not present any impediments to the development of the site (or by extension the general area) for uses other than rural or rural living.

The road infrastructure in the area is well maintained and provides ready access to the township.

The issue of the extensive tree cover, within the road reserves, presents both positive and negative attributes to the development of the site.

Whilst it is acknowledged that the potential bush fire issues associated with this tree cover needs to be addressed (and flora and fauna issues will also need to be fully assessed), the tree cover presents a visually significant attribute and would enhance and frame any development proposed on the site.

6.2 Supply and demand for residential land in locality

The Moama Land Use Strategy notes that there is an abundance of land zoned (and available) for residential use in the township. Whilst the strategic land use document recommends that the subject land may have some potential for future development, the issue is not fully discussed or evaluated.

The available demographic data would tend to suggest that whilst a solid and sustained growth figure is evident for the township, it is based on a low initial figure and that an overabundance of land is nominated to meet future residential growth needs in the area even if the growth level is maintained for a considerable period of time.

Based on the views expressed by the Department of Planning, in respect to past requests for rezoning, the rezoning of the land should only be considered in any overall review of the whole of the township's allocation if it can be established that a specific niche market sector is not being adequately catered for.

However, the site has many advantages over the more remote nominated residential lands in the Land Use Strategy in terms of access, ready access to services, proximity to commercial and employment opportunities, visual amenity, social, recreational and community facilities both within Moama and Echuca. Issues such as inundation must also be taken into account in determining the final outcome of the request to rezone.

In this regard, it is relevant to determine whether the subject site is more appropriate for development than other nominated lands, having regard to the more detailed investigations undertaken in this Study rather than the broad considerations of the Land Use Strategy.

6.3 Implications for Development

Any development on site will need to pay particular attention to surrounding development and uses on the site designed to acknowledge the amenity issues currently enjoyed by the surrounding land uses.

The flora and fauna of the road side vegetation needs to be fully recognised and assessed before any firm development plans are finalised for the site.

Any development proposal for the site should have regard to demographic trends and demand for the uses proposed.

Council should consider the extent of the current urban zonings available in Moama and determine whether or not they are located in appropriate areas and that the take up rate justifies the continuance of the zones in the current locations.

If a rezoning of this site were to be supported, a review of the development opportunities of adjacent lands should also be undertaken. Particular emphasis should be given to the integration of land east and to some extent south of the subject land into an urban or quasi-urban environment notwithstanding the potential for inundation. Measures to address and mitigate the impact of this potential would need to be incorporated into any development concept for the site.

7 Traffic Network and Transportation Issues

7.1 Analysis of traffic implications

Photo 2: Old Deniliquin Road property frontage

Photo 3: Entry to “Kooyong Park” from Old Deniliquin Rd

The following reports and studies have been examined in regard to access to and from the site:

- Echuca-Moama Traffic Study
  Prepared for RTA NSW by Arup Transportation Pty Ltd, December 1998.
- Murray River Crossing at Echuca-Moama Further Traffic Analysis
  Prepared for VicRoads by Arup Transportation Pty Ltd, August 2002.

Based on the available traffic studies that have been undertaken in the township and surrounding areas, together with the extensive works that have been undertaken to determine the future route of the Cobb Highway/new River Crossing, it is considered that the existing infrastructure of the area is adequate to meet any potential residential and tourist use of the subject site.

The issue of the potential flooding of the existing road network and the impediment that may exist in the limited number of crossing points of the rail corridor are discussed elsewhere in this study. At this juncture neither issue would preclude the site's development.

7.2 Access

The existing road network provides direct access to the site on three sides.

Urban use of the site would result in an increase in traffic along Holmes Street and Charter Street, Old Deniliquin Road and the residential streets of east Moama.

This would in turn create a need to review the intersection treatments to improve safety and efficiency of all proposed and existing intersections.

It would be desirable to ensure that any development addressed the issue of increased public transport, cycling, walking and vehicular accessibility of the site to Moama and for existing residents of the town to access any future services and facilities on the site.

7.3 Implications for development

Design of the street network should facilitate as many access points into and out of the site as possible, whilst having regard to the need to minimise potential disruptions to traffic flow on existing roads. Intersection designs would need to be appropriate to traffic volumes and the types of vehicles likely to require access to the site, including emergency vehicles and delivery vehicles.

8 Servicing – Water, Sewer or onsite disposal

In assessing the servicing issues associated with the subject land the following studies have been reviewed:

- Moama Rural Residential Strategy
  Prepared for Murray Shire by Habitat Planning, November 2000
- Moama Stormwater Management Plan
  Prepared for Murray Shire by Fisher Stewart Pty Ltd, November 2001.
- Moama Floodplain Management Plan
  Prepared for Murray Shire by Sinclair Knight Merz, September 2002
- Moama & Barmah District Flood Prone Land, Development Control Plan No.7 Murray Shire Council, September 2002
- Australian Rainfall & Runoff, Institute of Engineers, Australia

8.1 Details of reticulated services available

The proponent for the rezoning of the land has provided the following comments in respect to the provision of onsite reticulated services:

Sewage
A major hub for Moama's sewage is located in the Moama Industrial Estate. This is in close proximity to the north-west corner of the 'Land' (150-200 meters away). This direct access is expected to negate the need for extensive infrastructure work to pipe sewage to the pumping substation located at the corner of Winall and Council St. The developments, 'Moama on the Murray Resort', 'Horseshoe Lagoon Caravan Park' and 'Moama Waters' all had to take this circuitous route to provide this service to their land.

Water
Bordering properties are connected to town water. The main point of connection to town water is expected to be through the Moama Industrial Estate. Although the proposed development will be connected to the town water, it is envisaged that extensive use of water sensitive urban design – via an integrated water array encompassing the whole development - (storm water run-off, grey water systems and rainwater tanks) will minimise any additional load the development might place on Moama's services. This will greatly conserve town fresh water supplies. Additionally, there are substantial pumping infrastructure and assets already in place to lift water directly out of the Murray.

This can ensure provision of untreated river water for pond, irrigation of private gardens and public areas.

Electricity
The 'Land' is currently serviced with electricity.

Natural Gas
Natural gas pipelines are installed on 2 sides of the 'Land'. These are along Moama St and a portion of Holmes St. Plans are already with the council to

extend the pipeline along the full length of Holmes St. This service is considered highly desirable for the development due to its low energy cost and its low carbon dioxide footprint.

Council documents confirm the availability and capacity of the infrastructure to service the subject land.

8.2 Relative cost of provision of services

Council has undertaken extensive review and research into the provision of services to the west of the existing town, but has at this point in time not extended its survey/reporting into the possibility of servicing to the eastern area.

This is understandable given the current zoning of the lands in the area and the current development activity to the town's west and north-west.

However, it is noted that subject site is located in close proximity to existing servicing infrastructure and extension of any services would be a relatively simple exercise should it be determined that the site required servicing beyond the current limit.

Without the benefit of any detailed investigation, the relative cost of the provision of the service would be difficult to estimate, however, the information contained within the Council study, - Moama West Infrastructure, Strategy For Stormwater Drainage, Sewerage, Road Network And Development Contribution Plan would tend to suggest that from a servicing perspective the site has locational advantages over other nominated development areas.

8.3 Impacts on existing capacity

Whilst any additional input into, or utilisation of, an existing system or network will inevitably cause impacts upon that service, the reticulation and servicing of the subject land would be less problematic than other existing zoned parcels within the Moama catchment. This is due to its relative advantage of being closer to the existing infrastructure and the level to slightly elevated topography of the land relative to the existing township.

Having perused and noted the recommendations of the reports on services currently available within the township, the development of the subject land would appear to have long term cost advantages over more remote development areas favoured by the strategic planning studies undertaken by Council.

Further, the site has the advantage of water allocations that can be utilised in the development of the site without significant impact upon town services.

8.4 Alternatives

The proponent has indicated that the development of the land should be undertaken with clear environmental and sustainable outcome objectives, particularly in respect to the servicing of any developable sites.

In the detailed information provided by the proponent it is stated that the site could be serviced in the following manner:

Environmental Goals

The ultimate goal of the development is for it to achieve a 6 star rating without compromising residents' lifestyles. That is, be fully independent and self sustaining for energy and water. Although it may not yet be feasible to fully realise this goal, significant progress can be made towards this outcome when compared to other 'environmentally aware' developments.

In terms of energy, the focus will be on using proven technologies and techniques combined in innovative ways to provide viable real-world alternatives to energy generation for like communities. Central to pushing costs down is building an array that covers the whole development. This greatly improves the scale of economy to push down infrastructure costs for each resident to a point where it is comparable to using existing non-renewable energy infrastructure. This will allow the whole site to register itself as a 'Power Station' and sell excess electricity back to the wider grid. 'Green' electricity attracts a 20% higher wholesale price to that of non-renewable energy. This compares to a single household with solar cells selling power back to the grid. Electricity distribution companies buy 'green' power off individual households at a price that is only 30% that of non-renewable energy. Registering the whole development as a 'Power Station' will allow each resident to effectively receive 400% more (ie. moving from 30% of the non-renewable price to 120% of the non-renewable price) for any excess power they generate. A vast improvement in energy economics for each household.

To assist in achieving this, we are in the process of approaching various Universities to have Post Graduate students attack this challenge as part of their official assessments. RMIT have indicated they wish to put this on their Environmental Engineering curriculum as an elective subject for next year. This will enable teams of Post Graduate students to jointly address the challenge. A similar initiative is being launched with the Department of Photovoltaic's at the University of NSW. This is part of a process to engage universities to access their vast resource bases of research and personnel. Suitably qualified engineers will be independently engaged to oversee any solutions of merit this process generates.

State and Federal governments have professed strong policy support for the types of environmental initiatives outlined here. As such, we are optimistic that some degree of grants may be available to assist in bringing the initiative to fruition. This will bring in outside resources and generate additional economic activity in the Shire.

Another benefit of greater scale of economy for this development is the increased cost effective options generated for using different building materials. An example of this is 'Earth Brick' technology, developed by the CSIRO. This allows for the on-site manufacture of force air-dried (not kiln fired) bricks. See: www.amcer.com.au Material removed from constructing the developments water arrays may be used onsite to manufacture bricks for construction of residences and the commercial facilities.

This produces multiple economic and environmental benefits. These include reuse of material available onsite, much reduced energy in manufacturing building materials, net cheaper building costs (when done on this scale) and negligible transport costs (with its environmental impact). The bricks themselves

have superior thermal and maintenance properties, similar to that of thick concrete.

Specifically in respect to the servicing of the site the proponent states:

ESSENTIAL SERVICES INFORMATION

Sewage

The details provided are as previously stated in Section 8.1 of this report.

Water

The details provided are as previously stated in Section 8.1 of this report.

Electricity

The details provided are as previously stated in Section 8.1 of this report.

Natural Gas

Additional analysis needs to be undertaken on infrastructure requirements to connect natural gas to the 'Land'. This service is considered highly desirable, due to the low cost of this energy and its low carbon dioxide footprint.

8.5 Implications for Development

The servicing of the site would require Council to reassess its servicing strategies and priorities.

Cost saving advantages would be possible if the site were to be developed given its proximity to the existing town infrastructure.

Given the proponent's nomination of alternative methods of servicing, the rezoning of the site should be based on the establishment of a predetermined set of environmental development standards that enact the proponent's philosophy to the site's development.

9 Flooding, Drainage and Stormwater Management

In undertaking an Environmental Study for the subject land, the major issue which initially became apparent from a development perspective has been the issue of flooding and its effect on the site and the surrounding area and infrastructure.

The susceptibility of the land (and that immediately surrounding the site) to inundation appears to be the single most likely impediment to the successful development of the site for any urban use.

Whilst it is apparent that many other urban developments have occurred, in closer proximity to the river than the subject land, the potential danger of site development in a flood plain, or flood liable area, needs to be carefully assessed in any Study.

Attached to this study is a plan of the site showing spot levels for the entire site.

9.1 Information supplied by Proponent

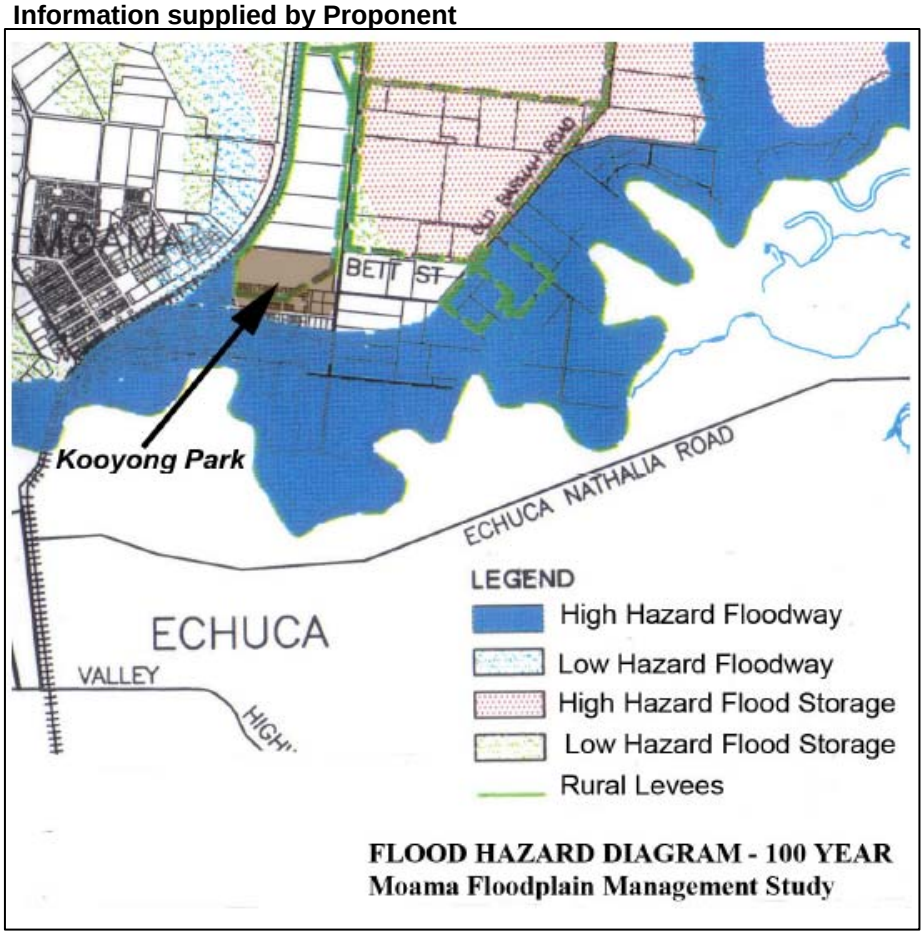


Figure 3: Flood Hazards

FLOOD STUDY ISSUES

Moama Floodplain Management Study

*• **Supporting Technical Studies** in the **Moama Floodplain Management Study** (dated January 2001) show the 'Land' is completely flood water free in a 100 year ARI flood event, except for a small edge along Holmes St and a small part of the south east tip of the site.*

- *Shire development considerations state that dwelling houses floor levels should be a minimum of 0.3 metres above the 1% (AEP) flood level. The majority of the 'Land' meets this condition.*
- *However in discrete strategic areas, some minimal height earth pads may be required to ensure full compliance.*
- *The majority of the site has an existing levee licence which would provide additional protection to urban dwellings in time of extreme flood.*
- *Access to the 'Land' in extreme flood conditions can be configured from both the north-west corner and the south-east corner. From the south-east, access maybe via Chanter and Edwards Streets. These streets both remained clear of water in the 1993 flood. A short culvert (approx 10 to 20 metres) would be constructed from Edwards St to the 'Land'. At the north-west corner, the Moama levee bank is approx 50 metres from the railway line that runs across this corner of the 'Land'. The strip of land between the railway line and the 'Land' (approx 20 metres in width) is already protected by Milgates levee. If a second access point is required, then a culvert could also easily be placed to join the levee to the railway line. In an emergency, a third alternative route to access the 'Land' is already in place. The railway line currently connects the Moama levee to the 'Land'. The works for this third option are already in place and link the Land to Moama proper, above a 100 year ARI flood event.*

As part of the preparation of the study the proponent was requested to comment on the effects of the 1993 flood upon the land and to comment on the levees that existed or could be built to protect the site from future inundation.

The proponent was also requested to comment upon the existing published data that was available in the assessment of the impact of flooding on the site.

The following information has been supplied, and verified, as part of this study:

- The information used by the proponent on the level of the 1993 flood has a higher AHD than that supplied in published data
- The chainage for Old Deniliquin Road as supplied by Council was 121.00 to 121.40. This information is in the 'Moama Floodplain Management Study' – Jan 2001- Appendix A, page A-10.
- During the 1993 flood, the entire property essentially remained free of flood waters. This was mainly due to earth works on the east and west boundaries of the land.
- The actual effects of the 1993 flood level on the site and the surrounding area was closer to a 1 in 50 year event.

- The property has an existing levee works license (50W805647). This approval is part of the joint levee license shared by a number of neighbours.
- There are no height restrictions to this levee license.
- A current application in respect to a levee for the site is with the Department of Water and Energy (DWE) and it is understood that it will be issued by way of a levee license 'independent' from the Joint Levee License.
- The DWE are currently processing this application and do not expect any major issues with issuing the separate license. The 'new' license is expected to be finalised and issued within the period of this draft LEP preparation and consideration.
- With an approved levee license that has no height limitations, the land can easily be protected to NSW residential standards under this authorization. This would entail upgrading existing earthworks, and augmenting some by 0.5m to 1m.

Following on from the initial review by the proponent the following information has been supplied addressing the issue of flooding and stormwater management.

FLOOD EVENT ISSUES

Flood Protection

- *Supporting Technical Studies in the Moama Floodplain Management Study (dated January 2001) show the 'Land' is flood water free in a 100 year ARI flood event, except for a small edge along Holmes St and a small part of the south east tip. The 100 year ARI is the preferred base standard for allowing 'residential' development. See Appendix C.*
- *The 'Land' currently has flood mitigation works provided by a low level levee around the property. This is a licensed levee. The levee licence doesn't have a height restriction. Equivalent flood protection to the Moama town levee could be achieved by increasing existing earthwork and land levels by approximately 700mm (70cm). This will protect against a 1 in 200 year flood event with 600mm of freeboard.*

Connectivity During Flooding

- *During the 1993 flood (rated a 1 in 50 year ARI flood) the land could still be accessed from the south-east (via Chanter and Edwards Streets) and the south-west (via Holmes Street). In a 1 in 200 year flood the waters would be approximately 30cm higher for this locality. These depths are still within the criteria set out for residents being able to safely drive through floodwaters.*
- *If deemed necessary, an access point to cope with extreme flood conditions (above 1 in 200 year floods) could be configured from the north-west corner of the Land. It would be relatively straightforward to construct a connecting causeway from the land to the town levee. It would need to contain a culvert that has the same capacity as the existing culvert under the railway line on Blair Street. This causeway would need to be approximately 60 metres in length.*

- *An additional alternative route (for emergencies) to access the 'Land' is already in place. The railway line currently connects the Moama levee to the 'Land'. The level of this connecting portion of the railway line is above the 1 in 200 year ARI flood event.*

Storm Water Management

- *Internal lakes and rainwater storage tanks will be used as initial detention points for storm water.*
- *For major rainfall events (above 35mm per day over an extended period), the lay of the land supports the use of existing natural storm water runoff channels down Moama St.*
- *For maintaining constant waterway levels during median rainfall events (up to 35mm per 24 hours), a 400mm pipe is already in place connecting the land to the Murray River. The pipe has a 14 megalitre per day capacity which may either add, or remove water from the water arrays.*

9.2 Information supplied by Department of Water and Energy

The Department of Water and Energy (DWE) advises that:

The DWE will be responsible for any new license approvals or changes to existing ones in relation to levees in the area of the development.

The DWE will also be responsible for assessment of any such works that fall under the Water Management Act 2000 such as, aquifer access (bores), surface water access (river pumps), storages (stormwater retention basins and harvestable right dams) and works that fall under the River and foreshore Improvement Act 1948 that are works in, on or under the bed or banks of a stream.

To enable to the foregoing data to be assessed in context, the following data is supplied from the published table of relevant flood levels in the general area east of Moama:

Information relative to Old Deniliquin Road (Chainage 995.50)

Flood Event	**Height**
1993 Peak Flood Level	95.18m (AHD)
50y Peak Flood Level ARI	95.40m (AHD)
100y Peak Flood Level ARI	95.62m (AHD)
200y Peak Flood Level ARI	95.85m (AHD)

9.3 Moama Floodplain Management Plan– Summary of Recommendations

The following are summarised from the Moama Floodplain Management Plan, prepared for the Murray Shire Council by Sinclair Knight Merz in September 2002.

Principal Features

The principal features of the Floodplain Management Plan include:

- Flood Protection – works on existing levee to ensure a single, continuous town flood protection levee to the standard of the recommended Flood Planning Level for general planning purposes around the north and east sides of the township.

- Floodway - A floodway with a single culvert under the railway line and around the eastern side of the levee, including expanded culverts under Chanter Street, to improve the flow of water around the town from the northern flood storage area.

- Strategic Flood ways - The designation of strategic flood ways and the associated removal of physical obstructions to preserve strategic areas of flood flow distribution.

- High Hazard Flood Storage Areas - The designation of high hazard and low hazard flood storage areas to the north and east of Moama.

Principal Planning or Non-Structural Features

The principal planning or non-structural features of the floodplain Management Plan include:

- Identification of Key Flood Zones - The identification of key flood zones (floodway and flood storage) and their associated hazard categories for a range of possible flood events.

- Minimum Floor Levels - For all approved developments, minimum floor levels for structural design purposes are to be 300 mm above the 1% AEP flood level.

- Identification of Flood Planning Levels - The identification of flood planning levels up to and including an extreme flood with the recognition that, while such a flood is possible, the risk of its occurrence is low. A flood planning level for general planning purposes (identifying what has become known as flood liable land) is also established based on the current application of the 95.63m AHD flood level at the Echuca Wharf Gauge.

- Development Control Plan - The development of a Development Control Plan (DCP) outlining the principles and policies to be applied by Murray Shire Council in the consideration of developments within the designated areas of the floodplain.

9.4 Murray Development Control Plan Chapter 7

The Development Control Plan addresses the following specific issues:

3.2. Flood Hazard Categories
For each of these major categories there exists two hazard categories :-
1. Low Hazard
2. High Hazard
The hazard categories are determined on depth and velocity of flood waters.

Low Hazard
Low Hazards typically defined as should it be necessary, trucks could evacuate people and their possessions, able bodied adults would have little difficulty in wading to safety.

High Hazard
High Hazard is typified as possible danger to personal safety, evacuation by trucks difficult, able bodied adults would have difficulty in wading to safety, potential for significant structural damage to buildings.

This creates four categories for flood liable land.

1	*2*	*3*	*4*
Low Hazard Flood Storage	*High Hazard Flood storage*	*Low Hazard Floodway*	*High Hazard Floodway*

These categories and land use development guidelines are described below.

3.3. Low Hazard Flood Storage Areas
3.3.1. Nature of Flooding
a) Water depths are less than 1.0m
b) Should it be necessary, people and their possessions can be evacuated by trucks
c) Able-bodied adults would have little difficulty in wading to safety.
d) Damage potential is low

3.3.2. Flooding Implications
a) The impact of new development on flood storage and therefore flood behaviour needs to be addressed.
b) Suitable for developments subject to evaluation of cumulative impact, except for some special use developments which by their nature are sensitive to flooding or where the use is especially necessary in times of flooding.

Development Considerations
a) General
No intensification of existing development will be permitted which is likely to cause a significant reduction in flood storage capacity or change in flood behaviour.

Council will consult with the DLWC, MDBC and the appropriate Victorian Catchment Management Authority in determining whether a development proposal is likely, either independently or in combination with other similar developments, to cause a significant reduction in flood storage capacity or change in flood behaviour.

b) Flood Control Works
i. Flood control works will be referred to the DLWC as integrated development no permit can be issued without approval from DLWC.
ii. Construction will conform to an accredited standard approved by the DLWC.
iii. Existing licensed flood control works will not be limited in height.
iv. Internal flood control works within a licensed levee are permitted in accordance with the restriction applying to the current licences.
v. Ring levees protecting dwellings and associated outbuildings of unlimited height will be permitted up to 1ha in area.

c) Residential, Commercial and Industrial Development
i. Floor levels will be a minimum of 0.3 metres above the 1% (AEP) flood level. Any part of the new dwelling or addition below that floor level shall be constructed from flood compatible materials.
ii. Non-habitable and minor additions may be permitted below flood liable land provided any part of the new building or structure below that level is built from flood compatible materials.

9.5 Implication for development

Based on the available information and site inspection it is considered that the flooding issue is not of determining weight in any decision process in respect to the rezoning of the land given:

- the levels provided for the site;
- the re-contouring that has occurred on site;
- the surrounding development and road infrastructure;
- the availability of levy works to protect the site;
- the potential for the creation of flood free access to the township; and
- the surrounding shallow depths of water even in an extreme event.

However should a rezoning be effected it is recommended that the following studies be undertaken to determine what would be needed to meet the requirements of development of the site:

- A hydrological survey be undertaken investigating both surface and below surface properties and geographical features;
- An analysis of the catchment area be undertaken to determine the extent of land necessary to hold on-site catchment during flood events greater than 1:50 year;
- A study be undertaken to determine those areas of the site, and adjoining roads that will remain subject to inundation and determine an access road levels plan that will provide all development proposed upon the site flood free access up to and including a 1:100 year flood event;

- A stormwater drainage plan be prepared for the site which allows for appropriate onsite detention, storage and controlled release as well as macrobiotic filtering of onsite stormwater prior to release; and
- An environment protection and sediment control plan be prepared for the development of the site.

10 Waste Collection

Given the location of the site and its proximity to the centre of the town of Moama, waste collection from a residential development is not considered to be a determining factor in any Local Environmental Study of the site.

10.1 Propose method of service delivery

Council's 240lt recycling and 140lt waste service would be available to service the residential component of the development. A trade waste collection service would be available to service any commercial/tourism component of the site's development.

Moama Waste Disposal Depot off the Cobb Highway has a seven day operation.

10.2 Implications for Development

In consideration of the request to rezone the Council should assess whether or not its existing waste disposal areas are of sufficient capacity to accommodate the additional waste to be generated from the development.

Should the site be rezoned to allow development, Council will need to commit to the provision of a service to meet the needs of the incoming residents, however, the site would not be any more difficult to service than more remote land currently zoned for residential development.

11 Other Infrastructure

11.1 Service Suppliers Comments

In the preparation of this report the following supply/service authorities were contacted to provide advice on the ability to service any future development of the site:

- Department of Water and Energy
- Telstra Operations
- Telstra Energy Asset Section
- Origin Energy
- Origin Energy Asset Section
- Country Energy

The following comments have been made available:

- Department of Water and Energy have responsibility for levees in the area and the advice obtained has been addressed elsewhere in this Study.
- Origin Energy has advised that it does not have any asset in the area which would be affected by any development upon the land.

Ongoing discussions have occurred with the electrical supply organisations. No impediment exists to the supply of services to the site.

The telecommunication organisations did not reply to the request for information, however, such services are a commercial decision and are not relevant to the determination of whether or not the site is environmentally suitable for development.

11.2 Implications for Development

Commercial decisions, not environmental considerations, will determine whether or not the supply authorities will make available the listed services.

There are no environmental impediments on the site that would deny the provisions of the services nominated.

The proponent has negotiated with the relevant authority regarding levy bank works - approval which will ensure that any development of the site could be rendered free of inundation.