

Local Environmental Study

for the **Berrigan Shire Council**

**Proposed residential lands in
Tocumwal and Barooga**

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THE PLANNING CONNECTION

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(i) Acknowledgments

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(ii) Disclaimer

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Part A Introduction

1.0 What is a local environmental study (LES)

A local environmental study (LES), in the context of strategic town planning, is a report which typically examines the suitability of land for a particular purpose.

The LES is different to a Local Study, which is usually prepared on a more general basis to form an information resource to a comprehensive review of a Council's main planning instrument.

The LES is required to be prepared in this instance as the lands proposed for residential use in Tocumwal and Barooga have previously been used for rural purposes, or are presently zoned for rural or semi-rural purposes.

The LES covers a comprehensive range of issues, including in this instance the justification for the additional land required, the legislative context and the requirements of various State and Regional Policies and Ministerial Directions, matters relating to previous use and potential contamination of the land, the effect on flora and fauna, local Aboriginal significance, physical constraints such as bushfire, flooding, aircraft noise and obstacle limits and traffic, and the servicing of the land.

Typically a LES will reach some conclusions about the suitability or constraints relevant to particular land for the intended purpose.

2.0 Background to the LES

The Berrigan Shire Council has previously carried out a series of land demand studies for the towns of Tocumwal and Barooga. These studies have identified that the towns have experienced significant growth over the past 3 years. Strong growth is expected to continue in these towns due to their attractive location on the Murray River and the movement of persons from surrounding agricultural properties and from across the border in Victoria.

The growth in the townships has resulted in the Berrigan Shire closely examining the available residential zoned land bank, in the knowledge that there is a significant lead time required to process land rezonings and to develop serviced land ready for home building.

Following the production of the land demand studies and meetings with the NSW State Government (Department of Planning) a planning report addressing the need for land rezonings was prepared by The Planning Connection. Subsequently the Berrigan Shire Council resolved to commence the rezoning process, under Section 54 of the Environmental Planning and Assessment Act 1979 (EPA Act 1979).

The Department of Planning has provided written confirmation that a local environmental study is required for each rezoning site, and has provided further directions in relation to the studies. A copy of this letter is provided as Appendix 1.

3.0 Strategic planning context – residential growth and land demand in Berrigan Shire

The Berrigan Shire, notably the Murray River towns of Tocumwal and Barooga, have experienced an increasing growth and demand for residential housing over the past 4 to 5 years, and in particular since 2001/2002.

Draft land demand studies for Tocumwal and Barooga have recently been prepared by the Shire's Economic Development Officer, with some input by The Planning Connection on the demand modeling. The studies and respective modeling indicate that the combination of continued growth in housing, the existing zoned land-bank, and the lead time involved in rezoning and developing serviced land, requires the immediate consideration of the rezoning of non-urban land areas in both townships to support future demand.

Having a balanced supply of correctly zoned and serviced/serviceable residential land is important to providing continuity of employment in the development industry, to minimising supply based increases in land prices and in maintaining the relative attractiveness of the Shire as a place to settle.

3.1 Justification of commencement of the rezonings

The basis for the rezoning proposal is provided by the draft Tocumwal and Barooga Land Demand Studies¹.

The land demand studies are comprehensive and well prepared, and form part of the rezoning evidence.

Each study uses a common methodology, as follows:

- Undertake a land use survey
- Identify vacant land and potential residential, industrial and commercial growth areas
- Examine growth trends using available data, including population growth, vacant land sales, subdivision approvals and dwelling house approvals
- Undertake land demand projections using demand model (based on the most reliable data)
- Determine current and future serviced urban land requirements and highlight suitable areas for, in particular, residential growth
- Recommend areas, localities and timeframes for rezoning.

With respect to the land demand modeling, each study has utilised changes in the number of dwellings as the most reliable method of estimating housing demand. The model is used as a guide only, as it is not possible to accurately predict every variable in the land development process. For example it is difficult to predict when private landowners of larger holdings will sell to development firms or develop the land themselves. The model therefore provides an estimate of future land requirements using the

¹ Tocumwal Land Demand Study (draft) 6 January 2005, Berrigan Shire Council, and Barooga Land Demand Study (draft) 6 January 2005, Berrigan Shire Council

available data on housing approvals, land take-up, dwelling type and dwelling occupancy rates.

It is also noted that the model seeks to provide a supply of 10 years of correctly zoned developable land. This is consistent with strategic land use planning in neighbouring Victoria. Again this is only a guide and should be flexible to account for land parcel size and shape, physical constraints, ownership patterns and financial issues such as holding costs, rates, land tax, security for bank loans etc.

The key is to monitor the supply of zoned land regularly, and to have a strategic future land use plan which will accommodate significant market movements, and set out a realistic growth plan which will provide some certainty to the development industry and the Shire.

3.2 Land demand in Tocumwal

The Tocumwal Land Demand Study establishes that as at June 2004 there was around 27 hectares of vacant residential zoned land (or about 7 years supply based on the estimated growth average over the next four years). The land demand model operates on the following main assumptions, which are reasonably conservative.

- An annual population growth of around 4% (a medium level of growth) linked to an occupancy rate and the change in the number of new dwellings required.
- The model provides an indicator of required rezoning of Greenfield development sites. Non-residential land demand and residential infill sites have not been included in the available land bank.
- Individual land parcels less than 1.4 hectares have not been included in the land bank, due to their relative economy of scale for development. The model is in its formative stages and could be refined by confirming through industry sources the minimum economic land size for conventional residential subdivision.
- A 25% discount (reduction) in the available land bank at the beginning of each 5 year calculation period, to account for the discretionary external factors and decisions which prevent some landowners from developing their land parcels.
- The aim to provide around 10 years supply of zoned land, and to begin the rezoning process with sufficient lead time to ensure adequate supply. Four years has been chosen as the lead time for the various approvals, rezoning and servicing of land to occur.

Based on the above, and having regard to the four year lead time, if no rezoning of land is commenced in Tocumwal in the next four years, the amount of land available will be reduced to a little over 2 years supply. This land may also be concentrated in one or two smaller development fronts, which limits consumer choice and can have negative affects on land price.

In order to provide 10 years supply and factoring in the required lead time, 32 hectares of land should be considered for residential rezoning in Tocumwal in

the near future. The Tocumwal Land Demand Study identifies a number of potential sites, which are examined in the next section of this report.

3.3 Land demand in Barooga

The Barooga Land Demand Study establishes that as at June 2004 there was around 20.6 hectares of vacant residential zoned land (or about 8 years supply based on the estimated growth average over the next four years). The land demand model operates on the same assumptions as for Tocumwal, except that due to different land parcel sizes allotments greater than 0.6 hectares have been included in the available land bank.

Based on the above, and having regard to the four year lead time, if no rezoning of land is commenced in Barooga in the next four years, the amount of land available will be reduced to a little over 3 years supply. If this land is concentrated in one or two smaller development fronts, it will limit consumer choice and can have a negative affect on land price.

In order to provide 10 years supply and factoring in the required lead time, 19 hectares of land should be considered for residential rezoning in Barooga in the near future. The Barooga Land Demand Study identifies a number of potential sites, which are examined in the next section of this report. It is noted that one of the sites mentioned in the study, that is, the rural small holdings land to the west of Snell Road at the junction of Takari Street, has not been included in this report due to a decision by the landowner.

4.0 Rezoning of land – legislative context

Within the State of New South Wales the town planning legislative framework is based around the Environmental Planning and Assessment Act 1979, as amended (the EPA Act 1979). The EPA Act 1979 governs matters such as the making of State, Regional and *Local Environmental Plans*, for example the current Berrigan Local Environmental Plan 1992, and also establishes the framework through which development is assessed.

Section 54 of the Act enables a Council to make a decision, by formal resolution, to commence the rezoning process for a given parcel of land. Following the resolution the Council notifies the (NSW State Government) Department of Planning (regional office based in Queanbeyan). The Department of Planning has provided written directions for the preparation of the study (Appendix 1).

For rezonings involving rural and rural-residential land, the preparation of a local environmental study is required prior to exhibition of the rezoning instrument, which is called a draft Local Environmental Plan (draft LEP). The LES is required pursuant to a prior Ministerial Direction known as G8 which states that draft LEPs shall not rezone rural land unless such action is justified by an environmental study.

Following preparation of the study, formal consultation under Section 62 of the EPA Act 1979, occurs with various relevant State Government authorities. Following satisfactory completion of the consultation and the finalising of the draft study the Berrigan Shire may apply to the Department of Planning to exhibit the LES and proposed rezonings pursuant to Section 65 of the EPA Act 1979.

All rezonings are subject to the final approval of the Minister for Planning.

4.1 Ministerial Directions

Under Section 117(2) of the EPA Act 1979 the Minister for Planning has produced directions relating to development and rezoning matters within the State of NSW. Some of these Directions are general and some are specific to particular areas, however the activity proposed is required to be consistent with the Directions or otherwise reasonably explain why the Direction should be varied in that instance.

Section 117 Directions relevant to the draft rezonings within this report are examined below. A new set of Directions commenced on September 30, 2005, and are applicable to this LES.

Direction No.9 Conservation and Management of Environmental and Indigenous Heritage

The draft LES is consistent with this Direction. There are no areas of significant Indigenous or European heritage identified within the LES. Significant areas of flora and fauna are intended to be preserved and enhanced (see Section 6 of the LES).

Direction No.12 Development near Licensed Aerodromes

The current Berrigan LEP 1992 contains provisions in clause 36 relating to obstacle surface limitation heights and minimising the risk of bird strike to aircraft. The Tocumwal aerodrome does not have an Australian Noise Exposure Forecast map prepared with regard to its operation. The draft LES is consistent with this Direction, and the LES will be referred to Air Services Australia under Section 62 of the EPA Act 1979.

Direction No.13 Environmental Protection zones

The LES is consistent with this Direction. The LES does not create, alter or remove an environmental protection zone.

Direction No.15 Flood Prone Land

The three rezoning sites within the draft LES are not designated as Flood Liable Land areas and not currently zoned to reflect flood liability. Flood affectation is discussed in Section 11 of this LES, with particular regard to the East Barooga site, and future investigations and subdivision work. The draft LES is generally consistent with Direction No.15.

Direction No.17 Integrating Land Use and Transport

The LES is consistent with this Direction.

Direction No.19 Planning for Bushfire Protection

Section 10 of this LES includes excerpts of the Rural Fire Service Bushfire Hazard Map. The LES assesses each site with regard to the provision of the required Asset Protection Zones pursuant to the *Planning for Bushfire Protection Guidelines 2001*.

The LES is consistent with Direction No.19 (it is noted that the draft LES will be referred to the NSW Rural Fire Service Commissioner under Section 62 of the EPA Act 1979 for comment and amendment where required).

Direction No.21 Residential Zones

The subject lands can be adequately serviced with reticulated water and sewer. The LES is consistent with this Direction.

Direction No.22 Rural Zones

This LES has been prepared pursuant to this Direction and adequate justification has been provided for the removal of the subject rural zonings (see Section 3 of the LES and refer to the original report to the Minister under Section 54 of the EPA Act 1979).

4.2 State and Regional Planning Policies

There are numerous State Environmental Planning Policies (SEPPs) and Regional Environmental Plans (REPs) which apply throughout the State of NSW. Specifically in regards to this LES and the proposed rezonings the following planning policies apply and are examined below.

Murray Regional Environmental Plan No.2 – Riverine Land (MREP 2)

MREP 2 applies to the Berrigan Shire, and applies generally to the east Tocumwal site which features the Barooga Cowal (a former anabranch of the Murray River) and the east Barooga site, which is in close proximity to the Murray River.

MREP 2 requires the application of nominated planning principles with respect to draft LEPs which may affect the greater River Murray system. With respect to the east Tocumwal site the important ecological area of the Barooga Cowal is to be protected. This is discussed in Section 6.6 of the LES.

With respect to the east Barooga site the land to be considered in the draft is required to be flood free. The issue of flood prone land is discussed in Direction No.15 above and Section 11 of this LES.

The draft LES is considered to be consistent with the provisions of MREP 2.

State Environmental Planning Policy No.44 – Koala Habitat Protection

The east Tocumwal site contains a stand of remnant River Red Gum woodland, which is potential koala habitat.

However the flora and fauna study conducted by the Johnstone Centre of Charles Sturt University (Albury campus) has confirmed that the habitat is not core Koala habitat, and as such will not require the preparation of a Plan of Management pursuant to the SEPP.

Part B Rezoning sites

5.0 Initial site selection

Each rezoning site has been selected based on its proximity to existing residential areas, the convenient availability of water, sewer and other services, and the general principle of contiguous urban development (to minimise the economic costs associated with infrastructure and the social costs associated with new fragmented subdivisions).

In the case of north Tocumwal the land proposed to be rezoned is opposite the existing residential growth area and represents a logical continuation of the urban development of that area.

In the case of east Tocumwal and east Barooga the proposed rezoning lands are contiguous with existing residential land subdivisions and represent logical progressions of that development.

5.1 The rezoning sites – North Tocumwal

The north Tocumwal site consists of two parcels of land, both adjoining and located on the northeastern corner of Bruce Birrell Drive and Bruton Street Tocumwal.

Figure 1 below details the site location. Note with all site location maps in this section of the report the north point is toward the top of the page.

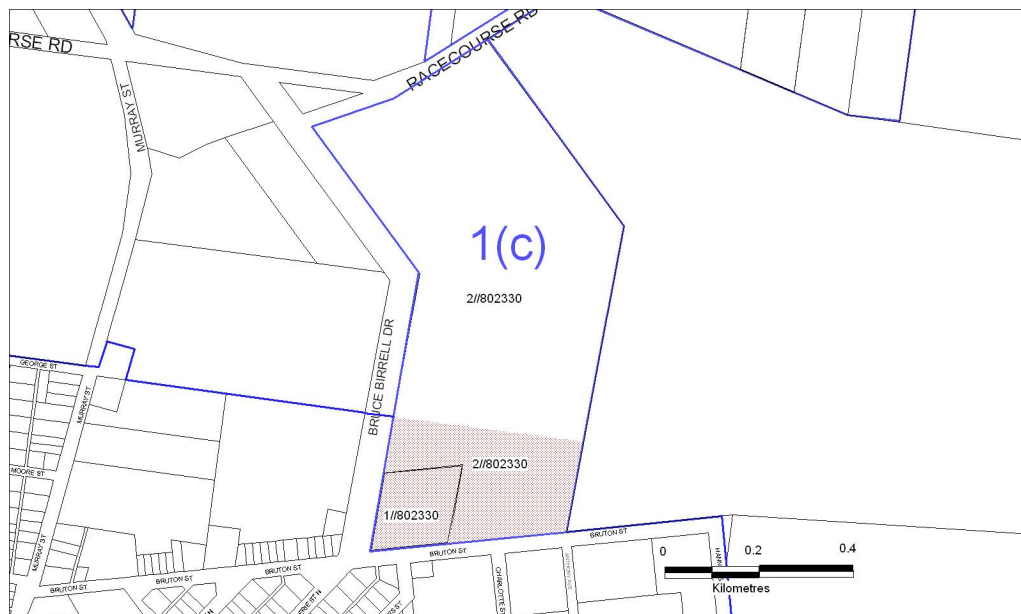


Figure 1 Location of North Tocumwal site

The smaller corner parcel of 2.77 hectares is known as Lot 1, DP 802330 Bruton Street Tocumwal and is zoned 1(c) Rural Small Holdings under the Berrigan LEP 1992. The larger surrounding parcel of around 7 hectares is known as part Lot 2, DP 802330 Race Course Road Tocumwal, and is also zoned 1(c) Rural Small Holdings.

The land concerned has a land use history of mixed farming and was potentially used as part of the Tocumwal aerodrome during and after World War 2.

The site has been cleared of most woody vegetation, with a small number of trees located mainly on the road boundaries of the site. Toward the centre of the site is an existing farm dam.

Below are photographs of the site taken from the eastern corner of the site on Bruton Street. The photographs progress from a northern to north-westerly view.



The land is quite flat but generally drains to the southwest corner of the site.

5.2 East Tocumwal

The East Tocumwal site has an area of 21.19 hectares and is described as Lot 32, DP 778129 Burma Road Tocumwal. The site is bordered to the south by the Tocumwal Golf Course, to the east by Burma Road and the aerodrome, to the north by Hutsons Road and rural land affected by the aerodrome flight path, and to the west by the existing residential growth area off Hannah Street. The site is zoned 1(a) General Rural under the Berrigan LEP 1992. Figure 2 below shows the site location

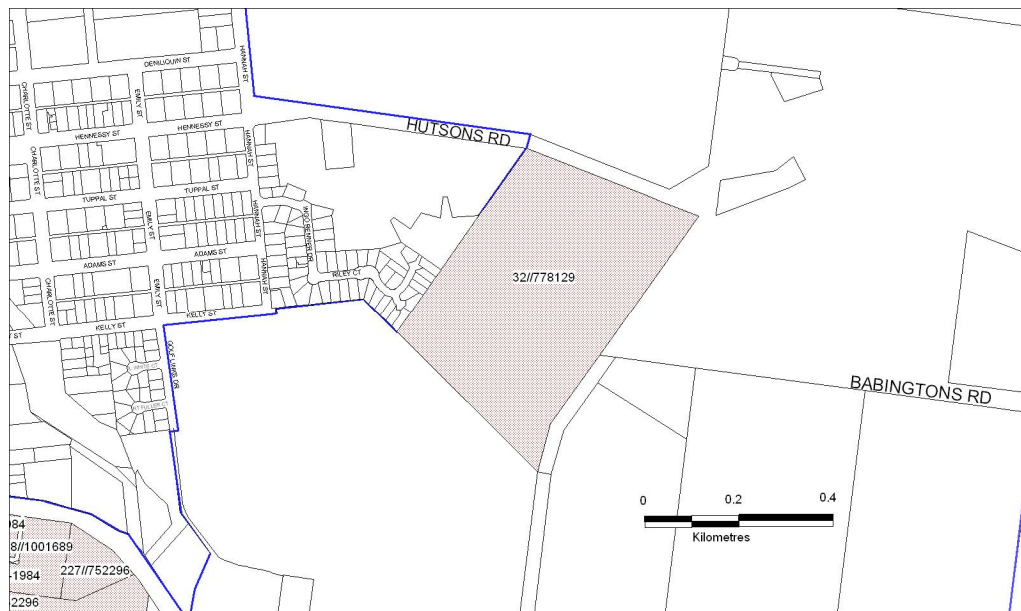


Figure 2 Location of East Tocumwal site

The land concerned has been used for mixed farming purposes and during World War II was part of the aerodrome complex. As such it is possible that coal tar waste from construction of the pavement of the adjoining aerodrome may be found on the site. There are no dwellings on the site.

The majority of the land has been cleared, with only a few clumps of trees remaining on the northern and western part of the site. However the southern corner of the site is crossed by a creek line (the Barooga Cowal) which is a feature of much of the adjoining golf course and the town of Tocumwal. The cowl is well treed and is a significant feature of the site.

Below are photographs of the site taken from various locations. The two photographs directly below are taken from mid way down Burma Road to provide a view to the northwest and west (showing the creek line).



The series of photographs below is taken from the north corner on Hutsons Road, and the photographs progress from a south-easterly to easterly view.



The land generally falls to the southeast and drains toward the cowl.

5.3 East Barooga

The East Barooga site comprises around 8 hectares of the western part of Lot 2, DP 1005956 Hughes Street Barooga. The site is zoned 1 (d) Future Urban under the Berrigan LEP 1992, and abuts the existing Barooga township residential land forming part of the Brybut subdivision.

Figure 3 below shows the site location.

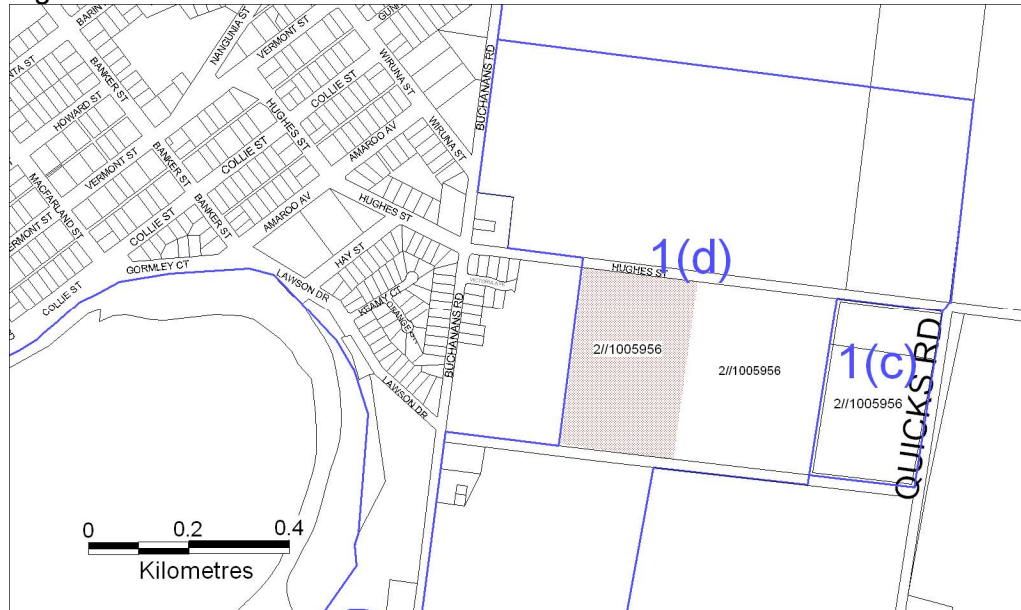


Figure 3 Location of East Barooga site

The land concerned has historically been used for agricultural purposes and possibly for orcharding. The site has been mostly cleared of woody vegetation, with 2-3 trees remaining. There are no dwellings on this part of the land.

Below are photographs of the site taken from the existing Brybut subdivision. The photographs progress from an easterly to a south-southerly view.



The site features undulating terrain and generally falls and drains to the southwest of the site (toward the Murray River).

Part C Environmental assessment of the sites

6.0 Flora & fauna assessment

The flora and fauna assessments for this local environmental study were carried out by the Johnstone Centre of Charles Sturt University. The Johnstone Centre has provided a report on the assessments which is a separate document to this study.

The aims of the assessment were as follows.

- Identify and describe all flora and fauna species (including rare and threatened flora and fauna), the vegetation communities and habitats which are present or which may occur within the site and surrounds and assess their conservation significance with regard to relevant Federal, State and Local Government environmental legislation;
- Assess the significance of potential impacts arising from the proposed activities on any native flora and fauna (including rare and threatened species), and their habitats, with respect to Section 5A (8 Part Test) of the *NSW Environmental Planning and Assessment Act 1979*, as modified by the *NSW Threatened Species Conservation Act 1995 (TSC Act 1995)*, the *Commonwealth Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act 1999)* and the *NSW Fisheries Management Act 1994 (FM Act 1994)*, and
- Provide recommendations based on these findings which will mitigate the effects of the proposed work on any native flora and fauna, particularly rare and threatened species and their habitat, and the general environment.

The findings of the Johnston Centre are summarised below, however the full report should be referred to in detail

6.1 North Tocumwal

- The survey recorded 21 native and 30 introduced flora species.
- There are two remnant Grey Box trees within the site.
- The site offers little habitat value for native flora and fauna, except for the significant stand of remnant Grey Box woodland on the western boundary of the site (roadside corridor).
- This remnant stand consists of old growth and mature Grey Box in general good health, with each tree typically containing multiple hollows. Only minor regeneration was recorded.
- The remnant stand runs the length of the western boundary and forms an important link to remnant native vegetation north and south of the

site, and well as important habitat for native flora and fauna within the site.

- 15 native and 2 introduced vertebrate fauna species were observed at the site.
- The threatened squirrel glider could occur within the roadside vegetation corridor.
- At least 2 species of threatened fauna *could occur* in the site area.

6.2 East Tocumwal

- 49 native and 34 introduced flora species were found within the site, with 90% of the native species found within the River Red Gum woodland at the south of the site within the Barooga Cowal.
- The Red Gum woodland was mainly composed of advanced regrowth and juvenile trees, and there was a high diversity of native rushes, sedges and other aquatic plants, as well as fallen timber and leaf litter, providing habitat for at least 2 native frog species and 3 reptile species.
- The site contains isolated single remnant Grey Box trees and small clumps of remnant Grey Box stands along the western and northern site boundaries. The clumps consist of old growth and mature trees, generally of good health, with some containing large hollows (good fauna habitat). Some clumps exhibited a good level of regrowth and regeneration.
- The Grey Box vegetation community is severely depleted in the vicinity of the site.
- The Brown Treecreeper (bird), listed as Threatened under the TSC Act 1995 was recorded at this site. 27 bird species were recorded overall. The high bird diversity reflects the habitat variation and larger patches of connected vegetation within the site.
- 7 species of threatened fauna *could occur* in the site area.

6.3 East Barooga

- 18 native and 30 introduced flora species were recorded at this site.
- 3 isolated paddock trees were recorded...2 old growth Yellow Box and 1 mature Red Gum, all in good health.
- These trees formed the only significant flora and fauna habitat on the site, and may have once formed part of the White Box, Yellow Box, Blakely's Red Gum woodland Endangered Ecological Community (EEC).

- It is unlikely that any threatened flora or fauna species would occur within the site area.

6.4 8 Part Test

Section 5A of the EPA Act 1979 provides 8 factors which are to be taken into account when determining whether a proposed development or activity “*is likely to have a significant effect on the threatened species, populations or ecological communities, or their habitats*”. These factors are to be taken into account by the consent authority to determine if there is likely to be a significant effect on the species, which may warrant further investigation, including the preparation of a Species Impact Statement (SIS).

This local environmental study does not propose to remove vegetation, and therefore a separate 8 Part Test has not been prepared for each threatened species or endangered ecological community recorded.

However, the 8 Part Test has been applied generally to the three proposed rezonings. This should be read in detail from the Johnstone Centre report.

The 8 Part Test assessment concludes that the rezonings are unlikely to impose a “significant effect” upon threatened species recorded within the study area, or those species considered to have potential habitat within the study area, but only in concurrence with the amelioration measures recommended by the assessment.

6.5 Commonwealth EPBC Act 1999

The EPBC Act 1999 relates to matters of National environmental significance, including RAMSAR wetlands, migratory birds species listed under international agreements and the Commonwealth marine environment.

The Johnston Centre report concludes that the three rezoning sites do not trigger the provisions of the EPBC Act 1999 which require further investigation under that Act.

6.6 Amelioration measures recommended

The impact amelioration measures are designed to ensure that the rezonings are unlikely to impose a “significant effect” upon threatened species recorded within the study area, or those species considered to have potential habitat within the study area.

6.6.1 North Tocumwal

- The remnant Grey Box woodland along the roadside corridor at the sites western boundary should be protected by fencing and revegetated with native shrubs and groundcovers (the report provides a specific list). The report recommends that this area be zoned for environment protection purposes

Note: The Berrigan LEP 1992 does not have a specific environmental zoning or open space zoning, and until the Shire reviews its comprehensive LEP perhaps the best method of protection is to incorporate the site into the existing Shire roadside vegetation management plan (for areas of significant vegetation). The Shire should manage the remnant vegetation for conservation and enhancement through additional endemic planting and weed control.

- Barbed wire fences should be removed from the site
- An asset protection zone (APZ) should be introduced which coincides with the bushfire APZ (see section 11 of this LES). This will allow a transition between the revegetated areas and cleared housing areas
- Strong consideration should be given, where at all possible, to placing utilities outside the remnant vegetation area, either on the opposite side of the road or along the southern site boundary. Road connections should not occur on the western boundary.
- Native vegetation removed as part of the future subdivision process should be offset by the planting of suitable species, to the requirements of the Murray Catchment Management Authority.

6.6.2 East Tocumwal

- The remnant River Red Gum woodland at the south of the site should be protected by fencing, appropriately zoned and managed to minimise weed growth – this may require native plant revegetation. Previous comments about zoning apply.
- An asset protection zone (APZ) should be introduced which coincides with the bushfire APZ (see section 11 of this LES). This will allow a transition between the revegetated areas and cleared housing areas
- Consideration should be given to including the western clump of remnant Grey Box within a park area (with suitable revegetation) and the remnant stands of Grey Box along the Hutsons Road frontage should be maintained within the subdivision if possible.

- Native vegetation removed as part of the future subdivision process should be offset by the planting of suitable species, to the requirements of the Murray Catchment Management Authority.
- In addition to the recommendations of the Johnstone Centre, it is noted that the remnant River Red Gum woodland in the Barooga Cowal has the potential to act as a wetland. The depression is subject to periodic inundation and would provide an effective filter of nutrients from a future residential subdivision to the north. Effective management of this area should be a focus of any future development approval over the land. The Berrigan Shire should consider whether the Barooga Cowal would best be managed under private or public ownership. Consideration should also be given to fronting future houses onto the Cowal to provide effective supervision and minimise rubbish dumping. Provision of an access roadway will minimise the bushfire APZ within actual housing lots.

6.6.3 East Barooga

- Native vegetation removed as part of the future subdivision process should be offset by the planting of suitable species, to the requirements of the Murray Catchment Management Authority.
- The noxious weed (African Lovegrass) identified along the Mulwala Road frontage generally should be destroyed and monitored to prevent regeneration.

7.0 Contamination & geotechnical assessment

The site contamination and geotechnical assessment of the rezoning lands was carried out by Coffey Geosciences, Albury office. Coffey have provided three reports which are documents separate to this study.

The assessment included the following investigations.

- Assess the site history to identify potentially contaminating activities that are currently being performed or may have been performed in the past, and determine regional groundwater conditions.
- Make an assessment of potential geotechnical constraints (including potential salinity impacts) associated with the sites.
- Make an assessment, through soil sampling and testing, of potential soil contamination issues relevant to east Tocumwal and the former nearby RAAF aerodrome, and east Barooga (possible former orchards).
- Advise on additional investigations and /or remediation work (if required).

Full details of the methodology, scope of work, soil testing procedures, quality control and limitations in carrying out the field work and desktop studies is included within the Coffey Geoscience reports, and should be referred to. The results of investigation of individual sites are summarised below.

7.1 North Tocumwal

- A review of aerial photography dating to 1969 reveals that the land has been used for pasture and cropping purposes. Land to the north and east of the site has been used for broad acre farming purposes.
- Records from Berrigan Shire indicate that the site may have formed part of the previous Tocumwal RAAF aerodrome, and as such may have been affected by the historic disposal of coal tar wastes associated with pavement construction.
- A check with the NSW Contaminated Land public record of Department of Environment and Conservation (DEC) notices reveals that no notices have been issued within the area.
- Groundwater bores within a 1km radius of the site can be used to assess groundwater usage and quality, however a check with the NSW Department of Infrastructure, Planning and Natural Resources (DIPNR, now the Department of Natural Resources - DNR) has revealed that there are no registered groundwater bores within a 1 km radius of the site.

- A visual inspection of the site by Coffey personnel did not detect any visual evidence of contamination, including surficial soil staining, odorous material, stressed vegetation, former buildings and footings and soil disturbance due to waste burial.
- Based on the site history review Coffey considers that the potential for contamination at the site is low. As with any assessment Coffey notes that it is possible that not all potential contamination issues at the site have been identified, and developers of land should adopt best practice in carrying out soil movement and waste disposal activities during site redevelopment.

7.2 East Tocumwal

- A review of aerial photography dating to 1969 reveals that the land has been used for pasture. Land to the north has been used for cropping purposes and to the northeast are buildings and runways associated with the RAAF aerodrome. Most of the buildings associated with the aerodrome have been removed between the 1976 and 1991 photographs. From 1996 a residential subdivision is under construction.
- Records from Berrigan Shire indicate that the site formed part of the previous Tocumwal RAAF aerodrome prior to divestment by the Crown circa 1975, and as such may have been affected by the historic disposal of coal tar wastes associated with pavement construction.
- Drums containing an asphalt emulsion like substance were found on a property some 600 metres to the west of this site in 2000.
- A check with the NSW Contaminated Land public record of Department of Environment and Conservation (DEC) notices reveals that no notices have been issued within the area.
- Groundwater bores within a 1km radius of the site can be used to assess groundwater usage and quality, however a check with the NSW Department of Infrastructure, Planning and Natural Resources (DIPNR, now the Department of Natural Resources - DNR) has revealed that there are no registered groundwater bores within a 1 km radius of the site.
- Coffey staff conducted environmental fieldwork which involved the collection of soil samples from a total of 46 boreholes, carried out in a grid pattern across the site. The soil samples were analysed in a NATA registered laboratory for metals (arsenic, cadmium, chromium, copper, mercury, nickel, lead and zinc), Organochlorine Pesticides, Organophosphorus Pesticides, Polycyclic Aromatic Hydrocarbons, Total Petroleum Hydrocarbons and Phenols.

- Based on the laboratory analysis program, all analysed soil samples obtained during the completion of a total of 46 boreholes across the site *exhibited contaminant concentrations at less than the applicable guidelines for protection of human health and the environment.*
- Coffey staff conducted a site walkover and during that time no visual or olfactory evidence of contamination was noted and no evidence of disturbed soil (such as that related to the disturbance associated with waste burial activities) was noted.
- Subsurface conditions at the site comprised generally of a clayey sand top-soil underlain by fine to medium grained clayey sand of suspected alluvial origins. Groundwater was not encountered in any of the boreholes completed during the assessment program.
- As with any assessment Coffey notes that it is possible that not all potential contamination issues at the site have been identified, and developers of land should adopt best practice in carrying out soil movement and waste disposal activities during site redevelopment.

7.3 East Barooga

- Records within the Berrigan Shire are limited in regard to this site. It is probable that the site has been used for broad-acre agriculture and possibly for orcharding.
- A review of aerial photography dating to 1969 indicates that the land was used for pasture purposes. A number of scattered trees were removed over the course of time. An orange grove was planted to the south of the site between 1991 and 1996.
- A check with the NSW Contaminated Land public record of Department of Environment and Conservation (DEC) notices reveals that no notices have been issued within the area.
- Groundwater bores within a 1km radius of the site can be used to assess groundwater usage and quality, however a check with the NSW Department of Infrastructure, Planning and Natural Resources (DIPNR, now the Department of Natural Resources - DNR) has revealed that there are no registered groundwater bores within a 1 km radius of the site.
- Coffey staff conducted environmental fieldwork which involved the collection of soil samples from a total of 20 boreholes, carried out in a grid pattern across the site. The soil samples were analysed in a NATA registered laboratory, for metals (arsenic, cadmium, chromium, copper, mercury, nickel, lead and zinc), Organochlorine Pesticides and Organophosphorus Pesticides.

- Based on the laboratory analysis program, all analysed soil samples obtained during the completion of a total of 20 boreholes across the site *exhibited contaminant concentrations at less than the applicable guidelines for protection of human health and the environment.*
- Subsurface conditions at the site comprised generally of a clayey sand top-soil underlain by fine to medium grained clayey sand of suspected alluvial origins. Groundwater was not encountered in any of the boreholes completed during the assessment program.
- Coffey staff conducted a site walkover and during that time no visual or olfactory evidence of contamination was noted and no evidence of disturbed soil (such as that related to the disturbance associated with waste burial activities) was noted.
- As with any assessment Coffey notes that it is possible that not all potential contamination issues at the site have been identified, and developers of land should adopt best practice in carrying out soil movement and waste disposal activities during site redevelopment.

7.4 Summary of geotechnical constraints

Sections 7.1 to 7.3 of the LES discuss the results of land contamination testing and analysis for each of the three sites.

Coffey Geosciences have not carried out specific detailed geotechnical studies of the three rezoning sites.

However from an analysis of the borehole data and fieldwork results, Coffey have provided the following information concerning further development of the rezoning areas.

- The sites are considered geotechnically suitable for residential or light commercial building development. Based on the results of the boreholes, the site classification based on AS2870-1996 “Residential Slabs and Footings” may range from “Class M to H”. A preliminary allowable pressure of up to 100kPA may be used for proportioning of shallow footings.
- While no formal assessment was completed relating to regional or localised salinity issues, a visual assessment was completed to identify potential saline soils. The vegetation community, the presence of surface moisture, bare ground, salt crystals and the position in the landscape were visually assessed in the field. During the fieldwork, no visual evidence of saline soils was encountered.

8.0 Indigenous cultural heritage assessment

The Cummeragunja Local Aboriginal Land Council undertook site assessments of the proposed rezoning lands in September 2005.

The Cummeragunja Land Council has provided letters relating to the assessments as documents separate to this report, however the letters have been included as Appendix 2.

Each site was inspected through a detailed walkover at 5 metre intervals. The site assessors searched for signs of previous Aboriginal occupation of the land, including scarred trees, shell middens, skeletal remains, stone axes and weapons.

The site assessors noted, in the case of each of the three sites, that no evidence of cultural significance was found. Details of previous work conducted by the assessors is included within the letters.

9.0 European cultural significance assessment

All three proposed rezoning sites are vacant and are not occupied by buildings. The aerial photographs examined for each site by Coffey Geosciences (2005) indicate that since 1969 buildings have not been present on the subject sites.

The sites are not listed as heritage items, as defined by the Berrigan LEP 1992, within Schedule 1 to that LEP. The three sites are not listed in the State Heritage register pursuant to the NSW Heritage Act 1977. The sites are also not listed by any State agencies².

The Tocumwal sites, more particularly East Tocumwal, may have some local cultural significance through its proximity and potential association with the nearby Tocumwal aerodrome, which was used as an air base during World War 11 and beyond.

For the purposes of this study however the three sites are considered to have minimal European cultural heritage significance. European cultural significance does not act as a constraint to the development of the sites.

² <http://www.heritage.nsw.gov.au> State Heritage Register

10.0 Bushfire assessment

10.1 Bushfire hazard map

The NSW Rural Fire Service has produced a bushfire prone land map for most local government areas within the State.

The map for the Berrigan Shire was produced in September 2003³ and consists of a map of the Shire with nominated bushfire hazard categories.

Extracts of the map are provided below for Tocumwal and Barooga. The three proposed rezoning sites are marked on the respective maps, and the sites are not located within a nominated bushfire prone area.

Notwithstanding this each site has been assessed according to its relative bushfire hazard below.

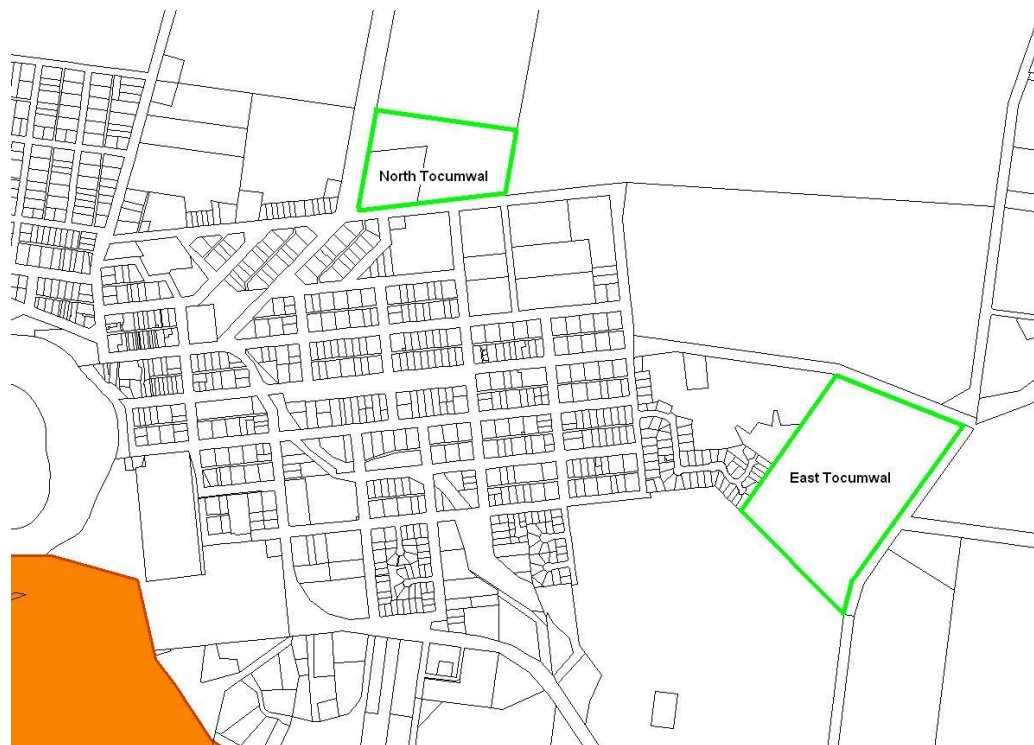


Figure 4 Extract of Bushfire Prone land map for Berrigan Shire – North and East Tocumwal sites

³ Berrigan LGA - Bushfire Prone Land Map, 12/09/2003 NSW Rural Fire Service



Figure 5 Extract of Bushfire Prone land map for Berrigan Shire – East Barooga site

10.2 North Tocumwal

The north Tocumwal site is generally devoid of significant woody vegetation within the body of the site. There exists one large paddock tree (Eucalypt species) in the middle of the eastern corner of the site.

The majority of vegetation within the site is along the western boundary (Bruce Birrell Drive). This vegetation consists of mature Eucalypt species which would fall within vegetation group 2 or 3 (woodland / open woodland) under the *Planning for Bushfire Protection Guidelines*⁴. The trees are up to around 15 metres in height and have an understorey of grass which is managed as a roadside verge (infrequent mowing). The trees are shown on the figure below.



Figure 6 Trees along Bruce Birrell Drive, Tocumwal, view to the south

⁴ Planning for Bushfire Protection, 2001. NSW Rural Fire Service and Planning NSW

According to Appendix 2 of the bushfire protection guidelines, development along the western site boundary of the North Tocumwal site should incorporate an Asset Protection Zone (APZ) of between 20 and 35 metres, depending on the vegetation grouping chosen.

If the site is used for future residential development, the APZ could be effectively incorporated into the yard area of dwellings within the subdivision.

10.3 East Tocumwal

The east Tocumwal site has a number of scattered Grey Box trees along the northern boundary to Hutsons Road. An APZ of 20-35 metres would be required for residential development in this area. Removal of trees within building envelope areas may remove the need for specific APZ's in this location, however this is not recommended (see section 7.6.2 of the report).

The site also has a clump of Grey Box close to the western boundary, which will also require an APZ of up to 35 metres.

The east Tocumwal site has a significant stand of red gum trees along the south boundary of the site. The trees generally follow the location of the "Barooga Cowal", which represents a meandering drainage depression and the former path of the Murray River. The red gum trees form a dense woodland and a significant fire hazard. The stand of trees is shown in the figure below.



Figure 7 Red gum stand within Barooga Cowal, southern part of East Tocumwal site

Under the Planning for Bushfire Protection Guidelines the red gum woodland would require an APZ of between 40 and 50 metres. The APZ could be

accommodated within any future development of the land and would incorporate the flora and fauna buffer (see section 7 of this report).

10.4 East Barooga

The east Barooga site is generally free of woody vegetation, having been cleared and used for farming purposes. There are three isolated paddock trees within the site. These trees will be difficult to retain if the land is developed further, and generally do not warrant the placing of individual asset protection zones.

There is a row of trees situated on other land which adjoins the south boundary of the site. This row of trees would be categorised as an open woodland under the Planning for Bushfire Protection Guidelines and would require an APZ of 20 metres. This APZ is provided for in the set back of the trees to the property boundary of the subject site (the set back comprises a road reserve).

The property to the south of subject site is shown as bushfire prone on the Rural Fire Service bushfire map, however the predominant land use is orcharding, and does not result in the need for additional APZ set backs to the subject land.

There is also a row of trees bordering land to the north of this site. These trees are again separated from this site by a road reserve, which should form an adequate APZ of 20 metres to the subject land.

The east Barooga site is shown in the figure below.



Figure 8 East Barooga site showing isolated paddock trees and trees near south boundary

11.0 Flood affectation and drainage assessment

The Berrigan Shire and Moira Shire (Victoria) Council's, in conjunction with the Commonwealth Department of Finance and Administration and the Goulburn Broken Catchment Management Authority, are presently undertaking a flood study which will provide information on the flood effects of the Murray River. The study is not yet advanced enough to provide revised details of River flooding within the Shire, as it relates to Tocumwal and Barooga.

11.1 North and east Tocumwal

The town of Tocumwal is generally protected by a levee system. Available flood information for Tocumwal includes a July 2004 study of the Tocumwal levee system by the NSW Department of Commerce⁵. This study found that the township of Tocumwal is flood protected to the 1% Average Exceedence Probability (AEP), and Design Flood levels have been adopted as the 1% AEP plus 0.6 metres freeboard.

The north and East Tocumwal sites are not affected by the 1% AEP flood event.

Notwithstanding this, the north Tocumwal site has a known stormwater low point in the south-west corner of the site at the intersection of Bruton Street and Bruce Birrell Drive. Localised flooding is caused by deficient drainage infrastructure and lack of maintenance⁶. The Berrigan Shire Stormwater Management Plan identifies the development of a new trunk main, detention basin, and pump station in the vicinity of the north Tocumwal site. This work is also included in the recently publicly exhibited review of developer charges under Section 94 of the EPA Act 1979, and is expected to be carried out in the 2005-06 financial year. Future developers of the north Tocumwal land would contribute to the cost of the drainage work on a proportional basis.

Drainage from the east Tocumwal site is proposed to be to an existing local detention basin and then the local creek system.

It is noted that the east Tocumwal site is affected by the Barooga Cowal, which runs through the rear of the site adjoining the golf course.

Notwithstanding that the Cowal is not identified as a local stormwater hotspot in the Stormwater Management Plan, this drainage depression would assist with local stormwater detention, and again investigation of the benefits and limitations of this depression would be required prior to further development of the land. This investigation would include appropriate setbacks for new development to minimise the risk of stormwater flooding.

⁵ Flood Levee Audit for Berrigan Shire, Tocumwal Levee, July 2004. NSW Department of Commerce, Dams and Civil Unit

⁶ Berrigan Shire Council Stormwater Management Plan, November 2004

11.2 East Barooga

The town of Barooga is not protected by a 'public infrastructure' levee system, although it is understood that some levees have been constructed on private land.

Available flood information for Barooga is limited and is derived from the 1975 flood profile⁷. This flood event was less than the 1:100 year event, however from this profile the Berrigan Shire has extrapolated the 1% AEP flood event, which is equal to the level of 116.3 metres AHD (Australian Height Datum). New houses within Barooga are generally required to be constructed to the 1% AEP standard, plus a 500mm freeboard, that is to level 116.8 AHD.

The east Barooga rezoning site is undulating and is located generally around the 116 metre AHD contour. Due to the undulating nature of the land a small area within the site may be affected by the 1% AEP flood event (based on current flood profiling), however it is expected that further subdivisional development of the land will involve necessary redistribution of soil which will reduce the extent of the undulations, and therefore, low points.

It is expected that dwellings will be required to meet the minimum building floor level to avoid falling within the 1% AEP level. Provided that future residential subdivisions are land formed to meet the 1% AEP the potential for river flooding up to the 1% AEP would not be expected to form a significant constraint to further development.

It is likely that the flood study presently underway within the Shire will also influence the final floor levels required for development in the east Barooga site. The conclusions of the flood study should be applied rigorously to all development within the proposed rezoning sites.

Notwithstanding the potential future zoning of the land and current flood study, all new residential development is required to meet the provisions of the NSW State Governments' flood prone land policy and gazetted guidelines.

Drainage from the east Barooga site would be to a detention basin and then to existing drainage lines at existing discharge rates. The detention basin may be located on adjoining land under the same ownership.

⁷ Flood Profile of the 1975 Flood – Drawing 136017, State Rivers and Water Supply Commission

12.0 Aircraft noise affectation assessment

The *east Barooga* site is not specifically subject to aircraft noise from airfields within and adjoining the town boundary.

The north and east Tocumwal sites are however located within the vicinity of the Tocumwal aerodrome, as depicted on the figure on the following page.

Whilst the aerodrome has four runways the east west runway is the main runway in use (which is infrequent). The north/south runway is used even less frequently, and the two diagonal runways have been closed for some time. The general weight limit for aircraft is 5700 kilograms, which is approximately equal to an 8 seat aircraft.

Clause 36 of the Berrigan LEP 1992 includes reference to a crosshatched area on the LEP map, within which the consent of the Council is required to carry out certain activities. The activities nominated include those which have the potential to attract birdlife – which are hazardous to aircraft safety. This crosshatched area *does not affect the two rezoning sites*, but generally relates to land between the two sites. This land may also be affected by aircraft noise, particularly for residential and other sensitive land uses.

Clause 36 of the LEP also refers to a Height Limitation Plan and an Obstacle Limitation Plan, which control the maximum height of structures around the aerodrome. The Berrigan Shire Aerodrome Committee has produced an Obstacle Limitation Plan.

Under the Obstacle Limitation Plan the maximum height of any structure on the north Tocumwal site would be limited to 28 metres at the site's eastern boundary and 38 metres at the site's western boundary. It is extremely unlikely that these heights will be approached by further development, and the obstacle limitation surface will not present a constraint to residential based development of the north Tocumwal site.

For the east Tocumwal site, the maximum height of any structure would be limited to 45.5 metres under the Obstacle Limitation Plan. The plan will therefore not present a constraint to residential based development of the east Tocumwal site.

In November 2001 the Berrigan Shire adopted "Berrigan Development Control Plan No.4 – Tocumwal Aerodrome". The development control plan (DCP) aims to ensure that adequate land is available adjacent to the aerodrome for related land uses and to consider the long term viability of the aerodrome when assessing nearby development applications. The DCP also refers to the area of crosshatching on the LEP map when discussing related aerodrome land uses. Berrigan DCP No.4 does not specifically address the issue of aircraft noise and urban development.



Figure 9 Aerial photograph showing Tocumwal aerodrome, rezoning sites and approximate area which may be affected by aircraft noise

Notwithstanding Berrigan DCP No.4, Figure 9 above shows the two rezoning sites as highlighted by green boundaries. The area highlighted in red may be subject to aircraft noise, and the Berrigan Shire does not intend to allow residential based development of this area.

The Tocumwal aerodrome does not have noise contours and associated mapping (an 'Australian Noise Exposure Forecast') administered by Air Services Australia, however the Berrigan Shire has indicated that it is generally satisfied that aircraft noise will not adversely affect the potential development of the north and east Tocumwal sites.

In this regard Clause 37 of the Berrigan LEP 1992 makes reference to the insulation of buildings from aircraft noise within an area to which an *Australian Noise Exposure Forecast (ANEF)* has been prepared. However, the frequency of flights and aircraft type at the Tocumwal aerodrome has not resulted in the preparation of an ANEF to date.

13.0 Traffic impact assessment

13.1 North Tocumwal

The north Tocumwal site has a total area of around 10 hectares and based on current dwelling densities could be expected to accommodate around 90 dwellings over an 8-10 year development timeframe.

The north Tocumwal site is located on Bruton Street, which has a local collector road status and capacity. The site is also located on Bruce Birrell Drive, which forms a minor link road from the township through to the northern areas of the town around the racecourse.

The operation of Bruce Birrell Drive and Bruton Street are unlikely to be adversely affected by the relatively low volumes of traffic which will be generated by the further residential development of the north Tocumwal site.

It would be expected that future residential developers would contribute to the upgrading of the road condition along the frontage to the land concerned.

13.2 East Tocumwal

The east Tocumwal site has a total area of just over 21 hectares and a potential development area of around 19 hectares. At current dwelling densities this could potentially provide for around 170 dwellings, developed over an 8-10 year timeframe.

The site is located on Hutsons Road, which has minor collector road status and capacity. Hutsons Road links the township with the aerodrome, and the road is only lightly trafficked at this point.

The further development of the east Tocumwal site for residential purposes would not be expected to detrimentally affect the operation of Hutsons Road.

It would be expected that future residential developers would contribute to the upgrading of the road condition along the frontage to the land concerned.

13.3 East Barooga

The east Barooga site has a total area of around 8 hectares and based on current dwelling densities could be expected to accommodate around 72 dwellings in a number of stages over an approximate 5-7 year timeframe.

The first stage of between 10-12 lots would link with the existing local road - Victoria Avenue which forms the entrance to the surrounding residential estate (the Brybuts subdivision). Victoria Avenue in turn connects directly with Buchanans Road which is a local collector road.

Further stages of residential development are likely to connect directly with Mulwala Road to the north, which is a local collector road. The further development of the east Barooga site for residential purposes would not be expected to detrimentally affect the operation of the local road network.

14.0 Servicing and infrastructure assessment⁸

Berrigan Shire Council is the service provider for water and sewerage within the Shire. The Shire holds adequate water supplies and reserves to service the proposed rezoning sites via the existing reticulated treated water network.

Tocumwal and Barooga have a reticulated sewerage system and adequate capacity exists to service the rezoning sites. Tocumwal has significant excess sewer capacity due to infrastructure associated with the operation of the former RAAF base.

Electricity within the Shire is provided by Country Energy, and sufficient infrastructure exists to meet most customer requirements, subject to the usual distribution arrangements for residential subdivisions.

Natural gas within the Shire is provided by Origin Energy, and is available in Tocumwal and Barooga. Sufficient infrastructure exists to meet most customer requirements, subject to the usual distribution arrangements for residential subdivisions.

Fixed line telecommunication is provided by Telstra and is subject to the usual residential connection requirements.

The Berrigan Shire coordinates weekly residential waste collections in Tocumwal and Barooga, and a public 'tip' is located in Tocumwal.

⁸ General information relating to water and sewer supply, waste disposal, electricity and natural gas supply and telecommunication is derived from the 'Welcome to Berrigan Shire' publication produced by Berrigan Shire. Specific information for each rezoning site has been provided by relevant Shire staff.

14.1 North Tocumwal

A water connection point is located within close proximity to the subject site and upgrades of the water main will not be required. The future developer of the land will be responsible for the extension of the main to the land.

A sewer connection point is located within close proximity to the subject site. The future developer of the land will be responsible for the installation of a rising main to the connection point and the associated pump station(s).

14.2 East Tocumwal

A water connection point is located within close proximity to the subject site and upgrades of the water main will not be required. The future developer of the land will be responsible for the extension of the main to the land.

A sewer connection point is located within close proximity to the subject site. The future developer of the land will be responsible for the installation of a rising main to the connection point and the associated pump station(s).

14.3 East Barooga

A water connection point is located within reasonable proximity to the subject site and upgrades of the water main will not be required. The future developer of the land will be responsible for the extension of the main to the land.

A sewer connection point is located within reasonable proximity to the subject site. The future developer of the land will be responsible for the installation of a rising main to the connection point and the associated pump station(s).

15.0 Open space and community facility provision

In June 2004 the Berrigan Shire completed a review of the Shire's Development Contributions Plan and produced a draft review document. This document was placed on public exhibition late in 2004.

The draft Development Contributions Plan 2004 does not contain specific provisions for community buildings, however it does contain indicative locations for future public open space.

The draft plan establishes a hierarchy of public open space, ranging from neighbourhood parks of 1500 to 2000m², local parks of 5000 to 6000m² and district parks of 2.5 to 4 hectares.

The draft plan identifies the need for a neighbourhood park in the area north of Bruton Street, which will most likely include the north Tocumwal rezoning land. The draft plan does not identify the east Tocumwal and east Barooga rezoning sites as the location of future public open space.

The location of the neighbourhood park within the north Tocumwal site will be dealt with by the Shire at future subdivision design stage.

16.0 Social and economic impact of rezonings

The rezonings have been initiated by the Berrigan Shire in order to provide for an adequate supply of residential zoned land. The towns of Tocumwal and Barooga are attractive areas in which to settle, and have experienced solid growth over recent years. Notwithstanding broader market trends this growth is likely to continue at a reasonable level over the coming years, due to the positive attributes of these river towns for both families and retirees. Tocumwal and Barooga also support incoming residents from across the Murray River in Victoria.

It is essential that a ready supply of zoned land is available for development, within a reasonable timeframe. Lack of supply will have negative implications for the relative affordability of home sites.

Lack of supply will also affect the continuity of employment for those within the building and related industries.

The aim for any residential release program is to attempt to 'smooth out the bumps' in the supply and demand cycle, to avoid significant spikes in costs and lulls in land take-up. The areas of land proposed (in context) are not significant and are proposed to cater for no more than 10 years growth, which is a reasonable aim and balances expectations with potential outcomes.

It is in the best economic and therefore social capital interests of the Shire to provide a sustainable land release program, which is the intent of these rezonings.

Part D Summary and recommendations

North Tocumwal

The north Tocumwal rezoning site is relatively unconstrained for residential subdivision development.

The land does not appear to be significantly limited with respect to previous contamination, flora and fauna, Indigenous cultural heritage, bushfire affectation, flooding, aircraft noise and obstacle limits, traffic and servicing, provided the comments and recommendations of this LES are reasonably followed.

It is the recommendation of this LES that should the rezoning of the land proceed and residential development occur, the **north Tocumwal site will require particular attention to stormwater drainage in the southwest corner of the site, and the placement of appropriate bushfire and flora buffers along Bruce Birrell Drive as detailed in this LES. Consideration should also be given to alternative placement of services to avoid disruption to the remnant Grey Box woodland along Bruce Birrell Drive, and to the inclusion of the remnant woodland within a linear park.**

East Tocumwal

The east Tocumwal rezoning site does not appear to be significantly limited with regard to previous contamination, Indigenous cultural heritage, bushfire affectation, flooding, aircraft noise and obstacle limits, traffic and servicing, provided the comments and recommendations of this LES are reasonably followed.

The site does have some constraints with regard to flora and fauna and the associated remnant River Red Gum woodland within the Barooga Cowal.

It is the recommendation of this LES that should the rezoning of the land proceed and residential development occur, the east Tocumwal site will require particular attention to the management of the Cowal as a combined stormwater detention area and natural area of some importance. Consideration should be given to fronting development to the Cowal via an access road.

Particular attention should also be given to the setbacks of future houses to the Cowal, for the purpose of a bushfire APZ and stormwater flooding buffer.

Consideration should be given to including the western clump of remnant Grey Box within a park area (with suitable revegetation) and the remnant stands of Grey Box along the Hutsons Road frontage should be maintained within the subdivision if possible with appropriate bushfire APZs.

East Barooga

The east Barooga rezoning site does not appear to be significantly limited with regard to previous contamination, Indigenous cultural heritage, bushfire affectation, traffic and servicing, provided the comments and recommendations of this LES are reasonably followed.

The site has a potential constraint with regard to the 1% AEP flood event of the Murray River.

It is the recommendation of this LES that prior to the rezoning of the land proceeding and residential development occurring, it should be confirmed (chiefly through the current jointly managed Murray River Flood Study) that the east Barooga land is either above the 1% AEP level, or capable of meeting the 1% AEP level through appropriate subdivisional work (which may include land forming and/or filling).

References

- Barooga Land Demand Study (draft) 6 January 2005, Berrigan Shire Council
- Berrigan LGA - Bushfire Prone Land Map, 12/09/2003 NSW Rural Fire Service
- Berrigan Shire Council Stormwater Management Plan, November 2004
- Flood Levee Audit for Berrigan Shire, Tocumwal Levee, July 2004. NSW Department of Commerce, Dams and Civil Unit
- Flood Profile of the 1975 Flood – Drawing 136017, State Rivers and Water Supply Commission
- <http://www.heritage.nsw.gov.au> State Heritage Register
- Planning for Bushfire Protection, 2001. NSW Rural Fire Service and Planning NSW
- Tocumwal Land Demand Study (draft) 6 January 2005, Berrigan Shire Council

Appendices

Appendix 1 Letter from the NSW Department of Infrastructure, Planning and Natural Resources (now the Department of Planning).

Appendix 2 Letters from the Cummeragunja Local Aboriginal Land Council.

Appendix 1



Department of
Infrastructure, Planning and Natural Resources

The General Manager
Berrigan Shire Council
PO Box 137
BERRIGAN NSW 2712

Attention: Wayne Chisholm

Dear Sir,

BERRIGAN SHIRE COUNCIL	
26 APR 2005	
FILE	
REFER TO	DM
COPY TO	EDO GMT
ACTION / CODE	
ACKNOWLEDGE Y / N	

Our ref: QUE0000227
Your ref: WRC:KW

Proposed Amendments to Berrigan Local Environmental Plan 1992

Thank you for your correspondence dated 25th January 2005, notifying the Department of Council's intention to rezone lands at Tocumwal and Barooga to allow for residential development. Thank you also for the opportunity to meet with Council staff and elected representatives on the 1/4/05 to view the sites in question.

I note Council has indicated it intends to undertake the rezonings in 2 stages in this instance, primarily to cater for immediate demand in both townships. Whilst the Department has some reservations about the demographic information provided by Council, DIPNR recognises the Shire is experiencing significant growth over the last few years and that opportunities to accommodate this growth need to be provided for.

In this respect, DIPNR has no objections to Council progressing the following rezonings on the basis that they are consistent with strategic directions for each town:

- North Tocumwal – Lot 1 DP 802330 and part lot 2 DP 802330,
- East Barooga – Part Lot 2 DP 1005956, and
- East Tocumwal – Lot 32 DP 778129.

In regards to the site located in South Tocumwal, the Department has some reservations about the suitability of the site for more intensive residential development. This is not to say the site has no potential for additional development at all, rather, that its location immediately adjacent to the Murray River raises a number of issues which are potentially of State and regional significance. Council would be aware of Murray REP No 2 as the Department's primary policy for the River. It is difficult for the Department to fully consider the merits of allowing additional development adjacent to the River in this location, without a clearer understanding of the long term plans for development & protection of the River in other parts of the Shire. The Department therefore recommends that Council defer this site at the moment and consider it again as part of the shire wide LEP Council will be required to develop over the next 4 years.

Accordingly, Council should consider progressing the remaining rezonings as one collective amendment. It is the Department's understanding that this would be Amendment No 6 to *Berrigan LEP 1992*.

Council should now proceed with the preparation of a draft plan that is suitable for exhibition under the *NSW Environmental Planning & Assessment Act, 1979*. You should ensure the draft plan is consistent with any SEPPs, REPs or s117(2) directions that may apply, particularly SEPP 55-Remediation of Land, Murray REP 2, G8-Rural Lands, G16-Airport Noise, G20-Planning for Bushfire Protection and G25-Flood Liable Land.

Murray/Murrumbidgee Region Riverside Plaza, 131 Monaro St, Queanbeyan PO Box 189, Queanbeyan NSW 2620
Phone 02 6297 6477 Fax 02 6297 9505 Website dipnr.nsw.gov.au

Appendix 1 continued



Department of
Infrastructure, Planning and Natural Resources

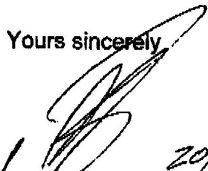
I agree a local environmental study should be prepared for each of the subject rezonings in this instance. This study should consider any relevant issues posed by the individual rezonings, particularly those raised by other government agencies.

Council should ensure it consults with any agencies that may have an interest in the draft plan, including RTA, DEC, DIPNR, DPI and Moira Shire Council.

An opinion on the draft plan from Parliamentary Counsel will also be required prior to requesting a section 65 certificate to publicly exhibit the draft plan. Please ensure that any final draft plan submitted for the Minister's approval is consistent with the wording and format of this opinion.

If you require any further information regarding this matter, please contact Martin Brown on 6124 9206.

Yours sincerely


20/4/05
Mark Grayson
Team Leader - Local Planning
Murray/Murrumbidgee Region

Murray/Murrumbidgee Region Riverside Plaza, 131 Monaro St, Queanbeyan PO Box 189, Queanbeyan NSW 2620
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Appendix 2

CUMMERAGUNJA LOCAL ABORIGINAL LAND COUNCIL

ABN 71 459 172 253
PO BOX 99, MOAMA, NSW, 2731
EMAIL: cummera@mcmedia.com.au

PH: 03 58693372
03 58693401
FAX: 03 58693348

15 September 2005

Anthony Newland
The Planning Connection - Wagga Wagga
Po Box 8744
Koorringal, NSW, 2650

Dear Anthony,

On 14/09/05 site's 1//802330, 2//802330, 32//778129 and 2//1005956 were inspected. However parcel number 1//802330 was covered with a cereal crop and the remaining three were covered with vegetation, which made accuracy difficult.

We used the grid method in all parcels of land resulting in no evidence of any cultural significance.

Conclusion

Evidence indicated that all these parcel's of land has been disturbed/cultivated in the past again our total assessment of all the parcel's of land have no evidence of any cultural significance were found.

Yours Truly



Kevin Atkinson
Co-ordinator

Appendix 2 continued

CUMMERAGUNJA LOCAL ABORIGINAL LAND COUNCIL

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FAX: 03 58603448

RE: FURTHER INFORMATION

We are not required to hold a ticket to assess cultural sites however Rebecca has completed a cultural program at Bangerang Cultural Centre through the RMIT Tafe at Melbourne which enables her to conduct site assessments.

Previous Work

I have conducted the site assessment for the Tocumwal Caravan Park at Tocumwal along the Murray River Frontage, Road works for the RTA N.S.W on two occasions at Corowa and Berrigan

Rebecca has conducted a 5 day site assessment program at Moira along the Cobb Highway N.S.W and she has also assisted with the road works south of Berrigan for the RTA N.S.W.

Site (1) 11802330

The above site was covered with vegetation that covered the surface however we were able to complete and make our assessment.

Our method was based on 5 meter intervals allowing us to look for stones used for tools i.e. axes, weapons, sketal remains, shells middens.

Site (2) 11802330

This site was covered with a cereal crop approximate 10cm high. Method was based on a 5 meter intervals allowing us to look for stones used for tools i.e. stone axes, weapons, skeleton remains, shells middens.

Site 32//778129

The above site was covered with vegetation undulated and had a sprinkling of trees on the northern side of the site

Our method was based on 5 meter intervals allowing us to examine this site for tools i.e. stone axes, weapons, skeleton remains, shell middens, scared trees.

Site 2//1005956

The above site was covered with vegetation undulated sandy loam and appeared to have been cultivated in the past also on the southern boundary it appear there was earth removal leaving a large dam.

Our method was based on 5 meter intervals allowing us to examine this site for tools i.e. stone axes, weapons, skeleton remains, shell middens