

BURONGA GOL GOL

## STRUCTURE PLAN REPORT 2020



## Document Control & Authorisation

Version	Purpose of Document	Author	Review	Approval
13.03.2020	Draft for report internal consultation	Paul Amoateng	Michele Bos	Michele Bos
16.09.2020	Final report	Paul Amoateng	Michele Bos	Michele Bos

**Disclaimer** – This report has been prepared by staff in the Health and Planning Division of Wentworth Shire Council.

The Buronga Gol Gol Structure Plan Background Report and Plan is a broad strategic and policy document. It is the background information to support future detailed assessment and implementation of the preparation of Local Development Plans and Development Control Plans.

Therefore, this document should not be used to direct or inform investment or private decision making in to future land purchases or use.

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# **Chapter 1 Introduction**

## **1.1 Purpose and scope of the report**

This background report has been prepared to inform the development of a structure plan for the townships of Buronga and Gol Gol (Buronga Gol Gol). It follows on from the previous Structure Plan Report for Buronga and Gol Gol prepared by David Richardson Environmental Planning in 2005. This earlier report provided an extensive analysis and assessment of the built, social, economic and natural environments of the Buronga Gol Gol area.

This revised Buronga Gol Gol Structure Plan Report builds on those known statistics and facts for the Buronga Gol Gol area that have been used in a number of other related planning processes with Council, agencies and the local community. This report primarily aims to interpret and draw together that information and then provide directions for informing the Buronga Gol Gol Structure Plan.

The 'way forward' provided in this report will contribute to further community discussion and enhancement of the structure planning process.

## **1.2 The need for a structure plan**

The Buronga Gol Gol area is currently experiencing fast growth in terms of housing development prompting the need for a modern and robust strategic land use plan to guide, manage and monitor future growth and development in the area.

The Buronga Gol Gol Structure Plan will constitute a non-statutory planning framework that provides broad and holistic strategic direction for a range of land use and development decisions. The plan will also provide guidance to the community, government, business and development industry about appropriate directions and opportunities for change as a reflection of the community's values and aspirations.

The Structure Plan will largely draw on the community's agreed vision for the Buronga Gol Gol area with respect to housing, infrastructure, community facilities and environmental management to achieve quality and sustainable urban development in the area.

The Plan will also need to address any relevant regional and sub-regional planning issues and policy directions.

Any recommendations or findings contained within the Structure Plan require formal Council adoption and endorsement from the Department of Planning & Environment. This process will support amendments to the Wentworth Local Environmental Plan 2011 and the Wentworth Development Control Plan 2011 to facilitate achievement of the aims and directions of this plan.

Consideration and communication of changes in demographic, economic, social and environmental issues require that the planning parameters adopted for Buronga Gol Gol need to be reviewed at least every 2 years to enable adequate time for a response to ongoing internal and external trends and changes.

### **1.3 Report preparation process**

An integrated process, comprising desktop research and stakeholder consultation, was undertaken in preparing this structure plan report. The desktop research involved analysis of local and regional context, land use and development patterns, biodiversity and natural environment, heritage and cultural values, transport, economy, infrastructure and community facilities. This was informed by the review of existing relevant strategies and studies such as the Structure Plan Report for Buronga and Gol Gol by David Richardson Environmental Planning in 2005 and Buronga to Monak Interface Study by Tonkin Consulting in 2016.

The stakeholder consultation comprised community and agency workshops, presentations, meetings and submissions. This integrated process helped to:

- a) Examine the study area and its relationship to the Sunraysia region.
- b) Identify opportunities and constraints for sustainable development of the area.
- c) Determine the requirements for servicing and infrastructure.
- d) Address stakeholder input and incorporate appropriate feedback and comments.

## **1.4 Structure of this report**

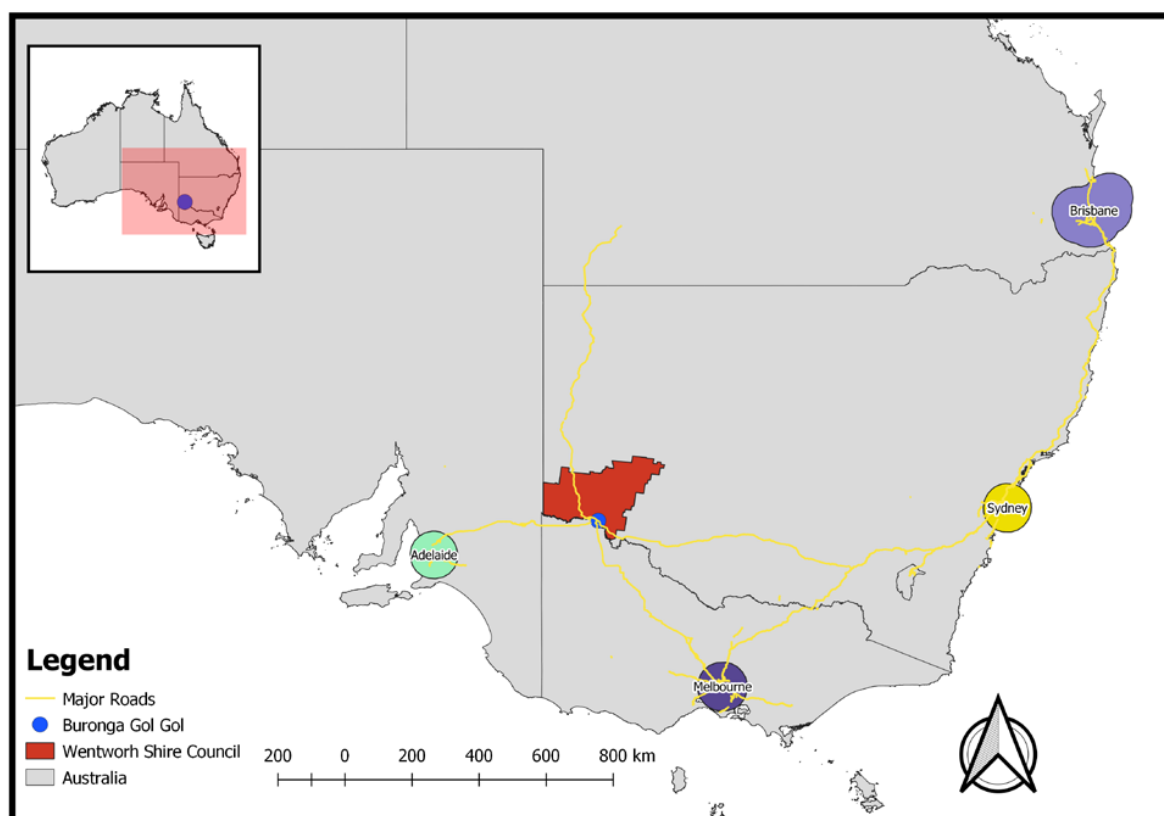
This report is divided into eleven (11) separate but interlinked chapters. Chapter 1 outlines the need and process for preparing the structure plan. Chapter 2 identifies the local and regional relationships and influences relevant to the future growth and development of the study area. Chapter 3 reviews existing state, regional and local strategic plans and policies relevant to the strategic planning and development direction for Buronga Gol Gol. Chapter 4 details the public consultation undertaken as part of the structure plan. Chapter 5 analyses the demographic trends and characteristics while Chapter 6 deals with the pattern of land use development in the area. The local and regional economic conditions are examined in Chapter 7 to identify existing economic constraints and opportunities. Chapters 8 and 9 examine the conditions and capacity of existing infrastructure and community facilities respectively, while Chapter 10 reviews the environmental resources and risks present in the study area. Chapter 11 provides the way forward in terms of the next steps towards developing the structure plan.

## Chapter 2 Regional and Local Context

This chapter describes regional and sub-regional relationships and influences for Buronga Gol Gol. The chapter also provides a brief overview of the local context for the Buronga Gol Gol study area.

### 2.1 Regional context

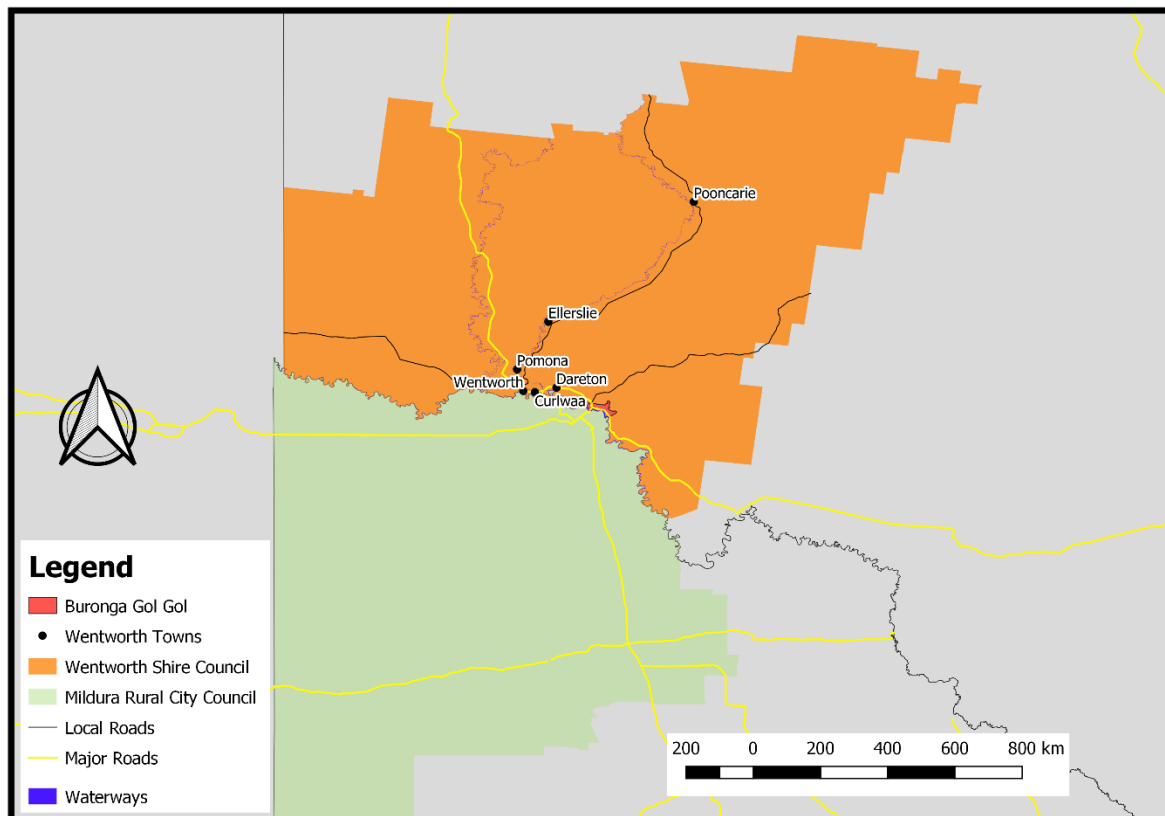
Buronga Gol Gol is located within Wentworth Shire, which is one of the far south west local government areas of NSW, Australia. Buronga Gol Gol is situated on the southern boundary of the Wentworth Shire less than three kilometres across the Murray River from Mildura Rural City in Victoria (refer Figure 2.1). Given this geographic location, Buronga Gol Gol has a number of differing strategic links to both Wentworth Shire as well as Mildura Rural City.



**Figure 2.1: Buronga Gol Gol in strategic context**

Buronga Gol Gol is wholly located in the Sunraysia region, which encompasses parts of both the Wentworth Shire and Mildura Rural City local government areas (refer Figure 2.2). The Sunraysia region is based along the Murray River and includes large areas of irrigated agriculture including grapes, citrus, grains and vegetable production.

Mildura is the main commercial centre in the economic region and provides higher order urban services for residents of Buronga Gol Gol and other towns in the region. Buronga Gol Gol is traversed by the Sturt Highway and Silver City Highway, which connect the Sunraysia region to some of Australia's major cities including Adelaide, Melbourne and Sydney as well as national and global markets.



**Figure 2.2: Buronga Gol Gol in regional context**

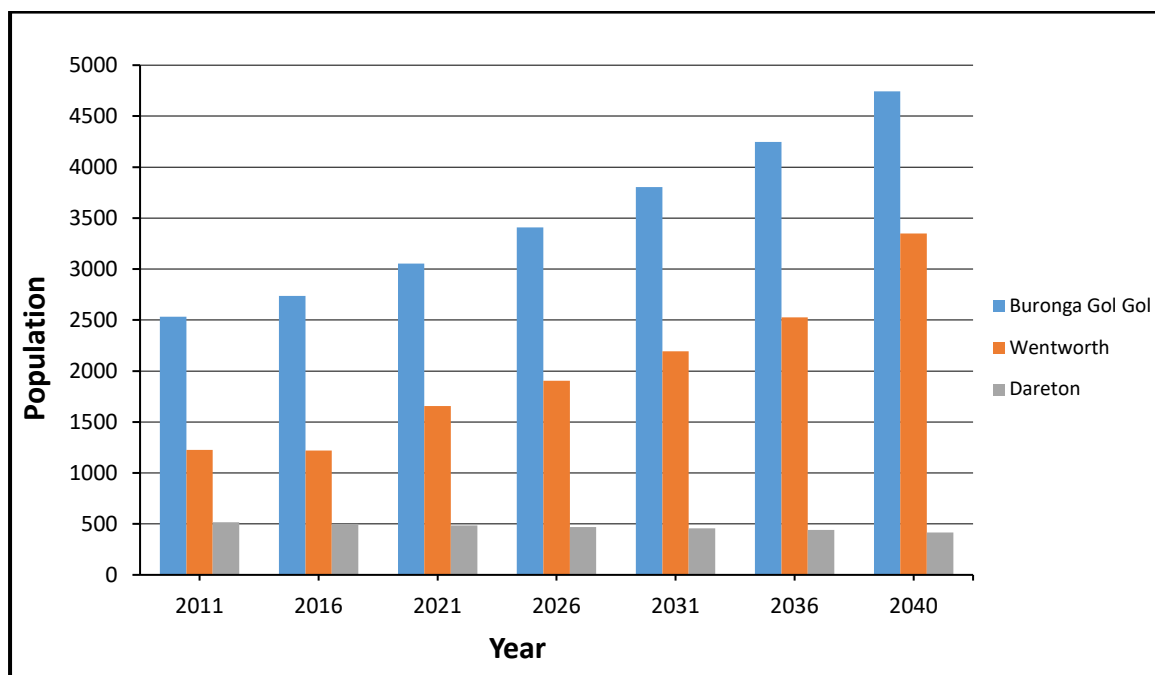
Wentworth Shire comprises an area of 26,000 square kilometres and had a population of 6,794 in 2016. Between 2011 and 2016, Wentworth Shire had a very low population growth rate of 0.55% or 37 persons per year. ABS 2018 Population Estimate indicated Wentworth Shire had a residential population of 7042 which was an increase of 248 persons (3.7%) between 2016 and 2018. This means that the Shire recorded an annual population growth rate of 1.8% between 2016 and 2018, which is a significant increase from the 2011-2016 rate of 0.6%.

Mildura Rural City, on the other hand, covers an area of 22,330 square kilometres and the total population was approximately 53,878 in 2016. The growth rate for Mildura Rural City between 2011 and 2016 was 1.11% or 580 persons per annum. In 2018 the regional centre

had estimated residential population of 51,760 and this is projected to reach about 60,000 in 2036 at an average annual growth rate of 0.8%.

These regional demographic trends coupled with geo-economic conditions and changes have led to significant residential growth and development in Buronga Gol Gol, with the area now largely operating as a 'defacto' northern suburb of Mildura. Some of the key regional influences are Mildura's relatively strong population growth and spill-over housing demand, environmental and infrastructure constraints to future urban expansion and housing development in Mildura, proximity to Mildura business centre, availability of relatively cheap land, proximity to the Murray River and distribution of economic activities and industries.

The population of Buronga Gol Gol increased from 2,531 in 2011 to 2,735 in 2016 at an annual rate of 1.55% (44 persons per year), which was above the average growth rate for both Wentworth Shire and Mildura Rural City Councils. The resident population of Buronga Gol Gol represented 40% of the total population of the Wentworth Shire in 2016. The residential population of Buronga Gol Gol was estimated as 2,859 in 2018 based on recent trends in residential development in the Shire. It is anticipated that the majority of the future population growth in Wentworth Shire is likely to occur in Buronga Gol Gol as other major localities within the Shire are experiencing stalled growth and/or decline (refer Figure 2.3).



**Figure 2.3: Population trend of selected localities in Wentworth Shire**

Source: ABS 2016

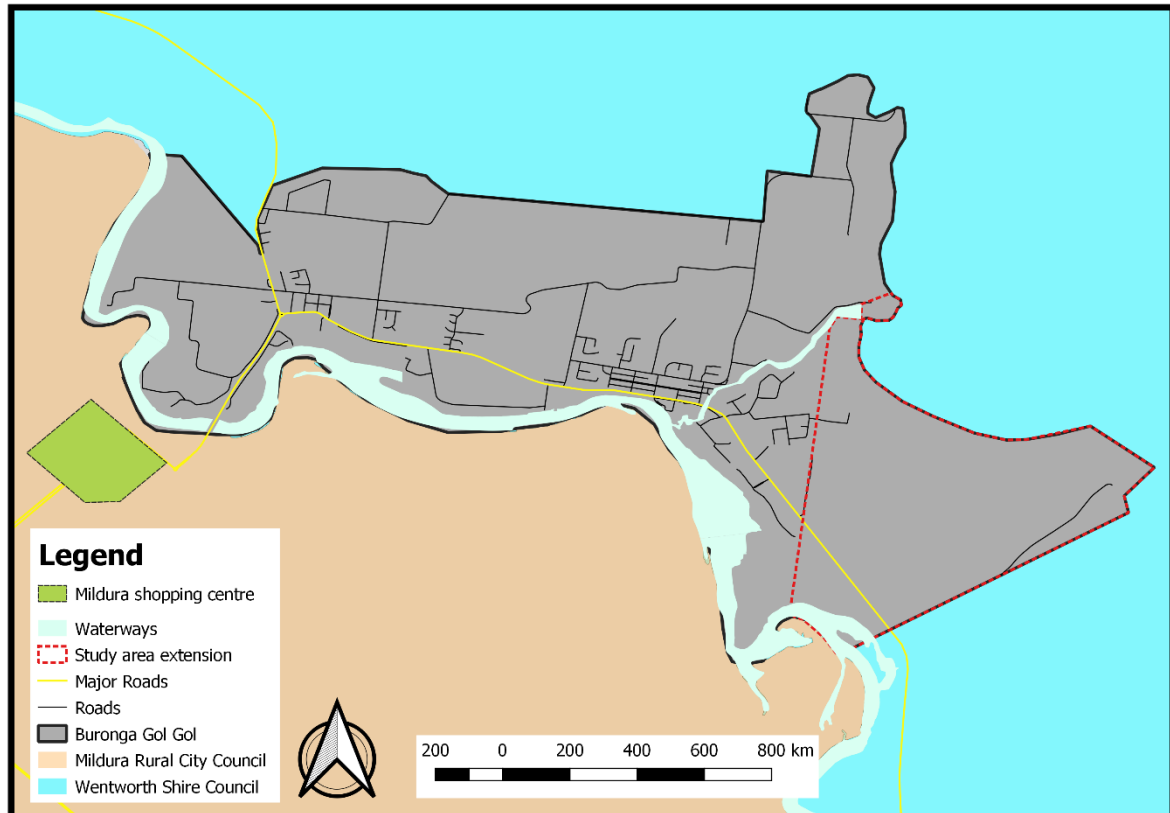
## **2.2 Local context**

The villages of Buronga and Gol Gol cover a land area of 31.1 km<sup>2</sup> (3,109 hectares) that is characterised by a relatively loose arrangement of urban and rural land uses, largely attributable to historical and social trends as much as previous planning regimes (refer Figure 2.4).

Buronga is located across the Murray River from Mildura at the intersection of the Sturt Highway and the Silver City Highway. Buronga is relatively established with a number of residential areas to the north and south within close proximity to the highways. The main commercial focus of Buronga is centred in and on the junction of the highways. There are a number of commercial activities abutting the Sturt Highway as it approaches Buronga from the Chaffey Bridge over the Murray River. Buronga contains an industrial precinct at the northern fringe adjoining the Silver City Highway and Corbett Avenue. A number of horticultural holdings are located to the north and east of Buronga with some intermixing with residential development.

Gol Gol is located approximately 3 kilometres east of Buronga. Gol Gol has an established residential area to the north and south within close proximity to the Sturt Highway. To the east of Gol Gol Creek are number of rural residential lots both north and south of the Sturt Highway, many of which were created from recent subdivisions are still being taken-up and developed. The commercial focus of Gol Gol is along the Sturt Highway. A number of horticultural holdings are located to the northern and western outskirts of Gol Gol.

In between Buronga and Gol Gol is an area referred to as Midway. Midway comprises the location of a Council Service & Community Centre and NSW State Agency offices. To the north of the Midway is a recently developed residential area, including undeveloped vacant land.



**Figure 2.4: The Buronga Gol Gol Study Area**

## 2.3 The way forward/ strategic implications

Structure planning for Buronga Gol Gol cannot be undertaken in isolation from the key drivers of change within the Sunraysia region. The key influences occurring locally and within the broader region will continue to have a significant influence on the future of Buronga Gol Gol. As a result, the Structure Plan for Buronga Gol Gol must recognise and respond to regional and sub-regional issues, as well as local constraints and opportunities, in order to provide a sound strategic way forward for local planning and development.

## Chapter 3 Strategic and Statutory Planning Context/Framework

Buronga Gol Gol is affected by a range of state, regional and local strategies and policies (refer Figure 3.1). This chapter reviews and considers the key recommendations and directions of the relevant strategic documents to inform the Buronga Gol Gol Structure Plan, to ensure it aligns with the relevant strategic directions.



Figure 3.1: Relevant strategic planning documents

### **3.1 NSW 2021**

NSW 2021 is the overarching State plan and policy direction document by the NSW State Government. The 10-year strategic plan sets priority areas for action and guides resource allocation within the NSW Budget.

The plan is divided into five key strategic areas– rebuilding the economy; returning quality services; renovating infrastructure; strengthening local environment and community; and restoring accountability.

Actions in the plan relevant to urban/rural land use planning in towns such as Buronga Gol Gol include:

- a) Encouraging steady and strategic growth in regional NSW focusing on infrastructure and job creation;
- b) Improving land and housing affordability and availability;
- c) Diversifying the economy by attracting and supporting key growth industries and investment;
- d) Improving road safety and freight logistics;
- e) Increasing share of trips by public transport, walking and cycling; and
- f) Encouraging job growth in centres close to where people live – a strategy called “Building Liveable Centres”

### **3.2 Far West Regional Plan 2036**

The Far West Regional Plan 2036 is the NSW Government’s 20-year strategic blueprint for the future of Far West NSW. It provides an overarching framework to guide land use planning and infrastructure funding decisions in the region.

The goal of the plan is to create a diverse economy supported by efficient infrastructure, an exceptional natural environment and resilient communities in the Far West region.

Relevant actions and directions for land use planning in Buronga Gol Gol include:

- a) Creating healthy built environments and responding to changes in the settlements;
- b) Providing greater opportunities for housing affordability and choice;
- c) Improving freight transport infrastructure and public transport services;
- d) Protecting agricultural land and managing rural residential development;

- e) Growing the agribusiness sector, value-added manufacturing opportunities and supply chains;
- f) Managing land uses along river corridors and protecting environmental assets; and
- g) Protecting Aboriginal cultural and European heritage assets

### **3.3 Murray Regional Plan 2016-2019**

This regional plan was developed by Regional Development Australia Murray (RDA Murray) to provide directions for enriching the health of communities and businesses in the region.

The plan identifies important challenges and opportunities to make the region competitive across industry sectors and remain economically, environmentally and socially sustainable in the long term.

The four key priorities of the plans are to ensure that:

- a) Community, business and industry sectors have the confidence, capacity and capability to deal with a complex and changing environment;
- b) The region has business and industries that are sustainable and viable;
- c) The region has supportive infrastructure that aligns with business and community; and
- d) The region is supported by integrated and relevant government policy and plans that align with the emerging needs of the community and business.

### **3.4 Draft Murray Regional Strategy 2009-2036**

The Draft Murray Regional Strategy is a long-term land use planning strategy prepared by the NSW Government to guide sustainable land use and economic development in the NSW Murray Region over a period of 25 years.

The strategy projects a population increase of 8,000 by 2036 across ten local government areas from Albury City in the east to Wentworth in the west.

The strategy divides the region into three subregions – one of which is the Lower Murray region comprising Wentworth and Balranald Shires.

The Lower Murray subregion is projected to have a small decline in population over the period to 2036 with demand for around 400 new dwellings as household sizes fall and different types of housing are needed.

The strategy states the need for local planning to provide a range of housing to meet the needs of the changing demographics, while ensuring development happens in the right locations.

The strategy identifies a default development setback of 100 metres for rural areas and 40 metres for new urban release areas and large lot residential (or rural lifestyle) areas along the Murray River and its tributaries to facilitate better integration of land and water management.

The strategy also identifies the need for an adequate supply of new employment land to cater for an expected 3,100 additional jobs in the region by 2036. The strategy's policy actions for realising this aim in the Lower Murray subregion include the protection of land resources and the support for sustainability of irrigated citrus, dried fruits, nuts and wine production as well as extensive grazing and a growing interest in mining of mineral sands.

The strategy also identifies ongoing development of tourism as a key economic imperative for the subregion and encourages councils to plan strategically for tourism development in local land use strategies to ensure that natural and built assets that support tourism are protected.

The strategy recognises the close relationship between communities along both the NSW and Victorian sides of the Murray River and the opportunities for considerable growth across the wider valley region. The strategy identifies potential for increased urban population in Buronga and Gol Gol complementing the growth of the nearby Victorian regional centre of Mildura.

### **3.5 Western Murray Regional Economic Development Strategy**

The Western Murray Regional Economic Development Strategy is a regional economic development framework developed through a 'bottom-up' process to identify economic development opportunities that capitalise on the endowments and industry specialisations of the Western Murray functional economic region. The vision of the strategy aims to establish *"a diverse, flourishing economy built on its current strengths in high-value agriculture and agricultural product manufacturing, along with potential future strengths in*

*mining, tourism and construction*". The three elements of the strategy for achieving this vision are:

- a) drive growth in high-value agriculture and value adding in agricultural product manufacturing
- b) enhance and diversify the economy by leveraging growth opportunities in tourism
- c) grow the mining industry and construction industries by capitalising on the Region's mineral and solar endowments.

The priority actions and projects articulated in the strategy with relevance to Buronga Gol Gol include:

- i. developing suitable and affordable accommodation for large-scale projects
- ii. improving zoning and servicing of industrial land
- iii. improving road and rail infrastructure for freight capability and movement
- iv. facilitating land-use change for high-value agriculture
- v. supporting investment in water efficiency infrastructure
- vi. investing in enabling infrastructure for new mining and solar energy projects

### **3.6 Regional Land Use Strategy**

The Regional Land Use Strategy which was prepared by PPK Environment & Infrastructure Pty Ltd in 1998 represented a comprehensive and coordinated approach to subregional planning between Wentworth Shire Council, Mildura Rural City Council and SunRISE 21.

The main purpose of the strategy was to establish an integrated framework for future horticultural, agricultural, industrial and urban development within the subregion.

The major land use issues in Buronga Gol Gol identified by this strategy include:

- a) Growth rates have been reasonably modest despite the high rates of growth in Mildura;
- b) Potential exists to capture some of the growth being experienced at Mildura;
- c) The towns are well separated making it difficult to co-ordinate growth;
- d) The proposed Midway village could help join the two towns;
- e) There are extensive areas of land zoned for urban and future urban development; and

- f) The close proximity to Mildura makes it difficult to predict future trends for Buronga Gol Gol.

Key future urban development directions for Buronga Gol Gol proposed by this strategy and considered in the BGGSP development are:

- i. The commercial, community and residential development focus around the Midway area;
- ii. An urban land release strategy based on a 20-year serviceable supply;
- iii. Logical and staged progression of urban development to avoid fragmentation and servicing problems; and
- iv. Avoiding urban development beyond identified zoned areas to ensure retention of horticultural lands.

### **3.7 Community Strategic Plan 2017-2027**

The Community Strategic Plan 2017-2027 prepared by Wentworth Shire Council is a general roadmap to guide future development and deliver optimised services within the Shire. The plan articulates a vision of making the Wentworth Shire *a thriving region, supported by a robust economic base, distinctive open spaces and strong local governance and leadership*.

The plan identifies four strategic goals based on a framework to achieve sustainable development and management based on balancing social, environmental, economic wellbeing and good governance.

The goals are for Wentworth to be a:

- a) vibrant, growing and thriving shire;
- b) desirable shire to visit, live, work and invest;
- c) community that works to enhance and protect its physical and natural assets; and
- d) caring, supportive and inclusive community that is informed and engaged in its future.

These goals are underpinned by a range of high-level strategies and actions that are subsequently linked to Council's 4-year Delivery Program and annual Operational Plan for attaining the Shire's vision.

Key strategies and actions relevant to future development of Buronga Gol Gol include:

- i. Encourage and support population growth and resident attraction;
- ii. Grow the potential for business and industry to develop and expand;
- iii. Maintain/create desirable open spaces and recreation facilities;
- iv. Plan for and develop the right assets and infrastructure;
- v. Prepare for natural disasters, biosecurity risks and climate change; and
- vi. Promote the celebration of the region's rich cultural and social heritage.

### **3.8 Wentworth Shire Community Plan 2012-2016**

The Wentworth Shire Community Plan 2012-2016 was developed to give real meaning to the Community Strategic Plan 20213-2023 for local communities.

This document outlines actions for the Shire and specific localities over the short to medium term along with responsibilities and funding sources to implement the actions.

Some of the significant recommended actions for the Buronga Gol Gol community included:

- a) Creation of a Buronga Gol Gol Development Group to provide a focus for community and economic action;
- b) Roadside beautification project to improve overall appearance of the community entrances and roadsides;
- c) Formation of Highway Action Group to pursue initiatives that would slow and/or reduce vehicle, especially truck movements;
- d) Development of Village Centre at the Midway Precinct to provide essential services to locals; and
- e) Riverfront improvements to enhance access, use and tourism appeal.

### **3.9 Wentworth Economic Development Strategy 2012-2016**

The Wentworth Economic Development Strategy was developed by the Wentworth Shire Council to promote and drive economic development opportunities in the Shire.

The strategy has a vision to stabilise, consolidate and ultimately grow the Shire's future by building prosperity, encouraging enterprise and promoting liveability.

The strategic framework to achieve this economic development vision is based on the following principles:

- a) Build business prosperity;
- b) Promote the region;
- c) Responsible resource stewardship;
- d) Enhance employment opportunities;
- e) Provide enabling infrastructure;
- f) Develop and build relationships; and
- g) Develop strong economic governance.

This strategy identified a range of priority projects for the Shire, among which the following are considered highly relevant to the future of Buronga Gol Gol:

- i. Tourism and promotion of the region;
- ii. Land viability and development;
- iii. Wastewater reuse; and
- iv. Small Business, Retail and Service Sector Strategy.

The key actions for each of these projects are identified and prioritised over short to long term in the Strategy.

### **3.10 Local Strategic Planning Statement**

The Local Strategic Planning Statement (LSPS) sets the land use framework for Wentworth Shire by addressing planning and development issues of strategic significance through planning priorities and actions, spatial land use direction and guidance. The LSPS identifies Buronga and Gol Gol as growing townships that are developing a new urban identity as a single township as growth from Mildura has flowed across the border, seeking new residential options close to the amenity of the Murray River and employment and services available in Mildura. Specific strategic directions and actions in the LSPS relevant to Buronga Gol Gol are:

- i. locate new urban development in the identified settlement boundary of Pitman avenue in the north, Native Ridge Lane in the east and Silver City Highway and Pitman Avenue West in the west;
- ii. provide for rural residential development in suitable locations subject further investigation;

- iii. support the development of the new local centre at Midway Drive by concentrating new commercial, retail, community and other non-residential development in the area;
- iv. deliver a new publicly accessible green grid (pedestrian and cycleway) along the northern banks of the Murray River out to Trentham Cliffs and linking to the local centre at Midway Drive;
- v. develop a Water/Wastewater Management Plan to ensure the services have the capacity to service current demand and future growth;
- vi. develop a Stormwater Management Plan to cater for and align with anticipated future growth for Buronga/Gol Gol; and
- vii. finalise Council's Integrated Water Management Cycle Plan for Wentworth Shire.

### **3.11 Wentworth Local Environmental Plan 2011**

The Wentworth Local Environmental Plan 2011 (WLEP 2011) is the overarching local statutory planning document for guiding development and planning decisions in the Wentworth Shire Local Government Area.

The WLEP 2011 primarily aims at promoting ecologically sustainable development and ensuring land availability for primary economic activities in the Shire. The WLEP 2011 provides the zoning and development controls for managing the way in which land is used within the Shire.

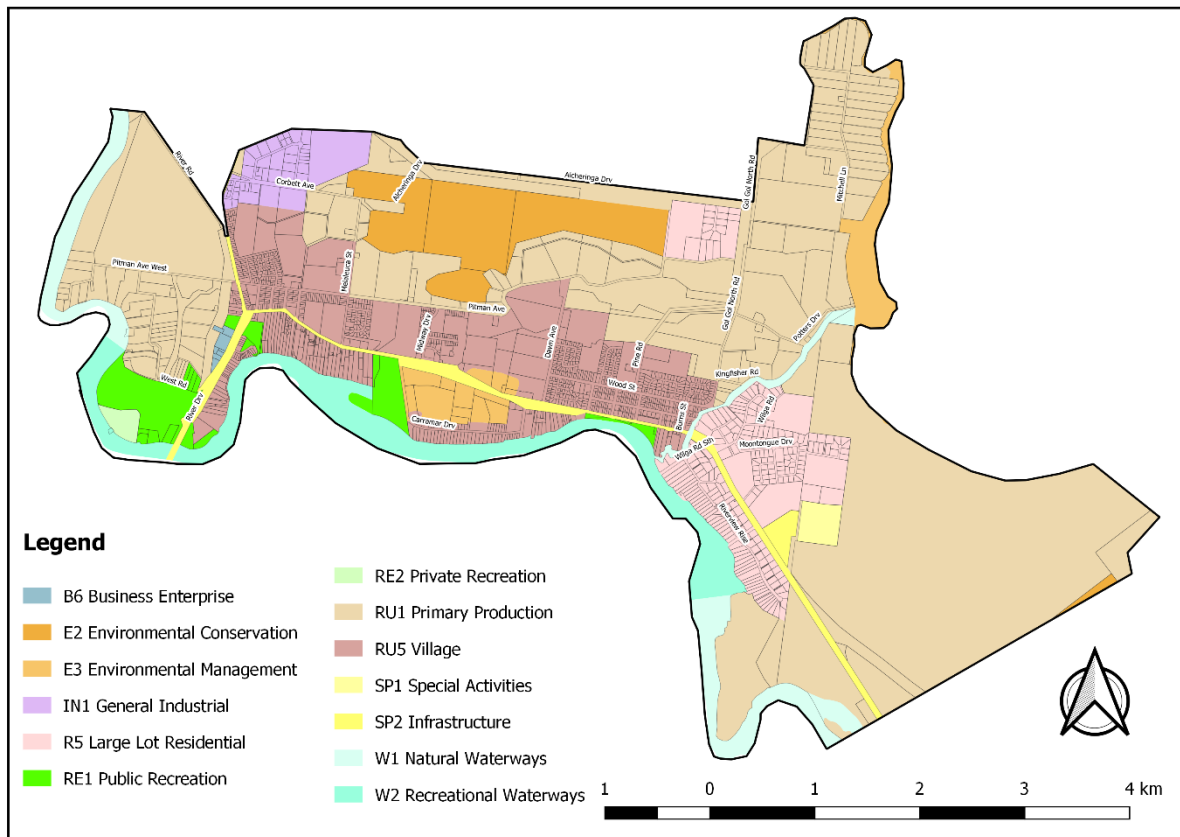
Developments within Buronga Gol Gol are required to be assessed and granted consent against the provisions of the WLEP 2011 to ensure compliance and alignment with the LEP's objectives which are:

- a) to encourage and manage ecologically sustainable development within Wentworth;
- b) to encourage the retention and enhancement of land that supports the primary economic activities within Wentworth for productive agriculture and other primary production purposes;
- c) to conserve and protect items of European and Aboriginal cultural heritage; and
- d) to conserve and protect areas of environmental significance, particularly conservation parks, reserves and the Murray and Darling River systems.

The WLEP 2011 land use zonings within the Buronga Gol Gol study area are summarised in Table 3.1 and shown in Figure 3.2. Further detail is provided in subsequent subsections of this report.

**Table 3.1: Summary of existing land use zones**

Land use zone	Zoned		Developed		Undeveloped	
	Area (ha)	%	Area (ha)	%	Area (ha)	%
RU5 Village	443	14.43	216	48.76	227	51.24
R5 Large Lot Residential	226	7.36	133	58.85	93	41.15
1IN General Industrial	72	2.34	39	54.17	33.1	45.83
B6 Enterprise Corridor	4	0.13	4	100	0	0
SP2 Infrastructure	72	2.34	N/A	N/A	N/A	N/A
SP1 Special Activities	15	0.49	N/A	N/A	N/A	N/A
RE1 Public Recreation	80	2.61	N/A	N/A	N/A	N/A
RE2 Private Recreation	9	0.29	N/A	N/A	N/A	N/A
W1 Natural Waterways	122	3.97	N/A	N/A	N/A	N/A
W2 Recreational Waterways	162	5.28	N/A	N/A	N/A	N/A
E2 Environmental Conservation	180	5.86	N/A	N/A	N/A	N/A
E3 Environmental Management	94	3.06	N/A	N/A	N/A	N/A
RU1 Primary Production	1592	51.84	N/A	N/A	N/A	N/A
<b>Total</b>	<b>3071</b>	<b>100</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>



**Figure 3.2: Existing land use zoning map**

### 3.11.1 RU1 Primary Production

RU1 Primary Production is the predominant land use zone applied over the Buronga Gol Gol study area and comprises 51.84% of the total land area. This zone reflects the dominance of agriculture and related land uses in the Buronga Gol Gol area. The objectives of this zone are to:

- a) encourage sustainable primary industry production by maintaining and enhancing the natural resource base;
- b) encourage diversity in primary industry enterprises and systems appropriate for the area;
- c) minimise the fragmentation and alienation of resource lands;
- d) minimise conflict between land uses within this zone and land uses within adjoining zones;
- e) ensure the protection of both mixed dryland and irrigation agricultural land uses that together form the distinctive rural character of Wentworth;
- f) ensure land is available for intensive plant agricultural activities; and

- g) encourage diversity and promote employment opportunities related to primary industry enterprises, including those that require smaller holdings or are more intensive in nature.

Two minimum lot sizes, being 10 hectares and 10,000 hectares are applied to land in this zone as per the lot size map of the WLEP 2011. The average lot size across the zone is 8.8 hectares with a significant number of land holdings being approximately 1 hectare. While land in this zone has been historically used for horticulture, a considerable amount has progressively transitioned to rural residential development. This is especially evident in Buronga West and on Mitchell Lane in north east Gol Gol.

The widespread residential-like development in the RU1 zone does, to a large degree, reflect the growing demand for rural residential living in Buronga Gol Gol and the Shire as a whole.

#### **3.11.2 RU5 Village**

The RU5 Village zone land covers 443 ha of which 48.76% has been developed. Almost all the existing urban area and future urban release area of Buronga Gol Gol fall within this zone.

The objectives of this zone are to:

- a) provide for a range of land uses, services and facilities that are associated with a rural village;
- b) promote development in existing towns and villages in a manner that is compatible with their urban function;
- c) encourage well-serviced sustainable development;
- d) ensure there are opportunities for economic development;
- e) deliver new residential and employment growth in Buronga and Gol Gol; and
- f) ensure business and retail land uses are grouped within and around existing activity centres.

There is no minimum lot size for this zone in the lot size map of WLEP 2011. The average lot size across the existing developed area is approximately 1603 m<sup>2</sup>.

#### **3.11.3 R5 Large Lot Residential**

The R5 Large Lot Residential zone land is located east of Gol Gol Creek and the eastern end of Pitman Avenue in Gol Gol.

This zone covers approximately 226 ha with more than half (58.85%) currently developed for residential housing in a semi-rural setting.

The objectives of this zone are to:

- a) provide residential housing in a rural setting while preserving, and minimising impacts on, environmentally sensitive locations and scenic quality;
- b) ensure that large residential lots do not hinder the proper and orderly development of urban areas in the future;
- c) ensure that development in the area does not unreasonably increase the demand for public services or public facilities;
- d) minimise conflict between land uses within this zone and land uses within adjoining zones; and
- e) restrict the construction of new residential and other sensitive uses in flood prone areas.

The minimum lot sizes applied to this zone in the lot size map of the WLEP 2011 are 3000 m<sup>2</sup> and 5000 m<sup>2</sup>. The lot size of the developed area in this zone ranges from 3,000 m<sup>2</sup> to over 10,000 m<sup>2</sup> with an average lot size of 6542 m<sup>2</sup>. The developments in this zone feature a combination of rural and upscale residential housing.

#### **3.11.4 B6 Enterprise Corridor**

The B6 Enterprise Corridor zone has been applied to a strip of land adjacent to the Sturt Highway in southwest Buronga. The zone covers about 4 hectares and provides for a range of uses such as business premises, tourist and visitor accommodation and building supplies.

The objectives of the zone are to:

- a) promote businesses along main roads and to encourage a mix of compatible uses;
- b) provide a range of employment uses (including business, office, retail and light industrial uses);
- c) maintain the economic strength of centres by limiting retailing activity; and
- d) provide for residential uses, but only as part of a mixed-use development.

The minimum lot size for this zone in the WLEP 2011 lot size map is 1,000 m<sup>2</sup>. However, the average size of the existing developed lots in the zone is approximately 4,000 m<sup>2</sup>.

### **3.11.5 1IN General Industrial**

The 1IN General Industrial zone is located in northwest Buronga and covers an area of 72 hectares of which more than half (54.03%) is developed.

The zone is progressively developing into Buronga Gol Gol's industrial precinct and its objectives are to:

- a) provide a wide range of industrial and warehouse land uses;
- b) encourage employment opportunities;
- c) minimise any adverse effect of industry on other land uses; and
- d) support and protect industrial land for industrial uses.

The minimum lot size of this zone in the lot size map of WLEP 2011 is 1,000 m<sup>2</sup>. However, the overall average lot size of existing subdivided/developed land in the zone is 7,500 m<sup>2</sup>. The average lot size for recent re-subdivisions is smaller, being around 3,500 m<sup>2</sup>. The trend towards smaller industrial lot sizes is expected to continue into the future as this is deemed more suitable for the types of local industrial activities common in Buronga Gol Gol.

### **3.11.6 SP1 Special Activities**

This zone is applied to the Sunraysia Wildlife Sanctuary located east of Gol Gol and covers an area of 15 hectares.

The objectives of the zone are to:

- a) provide for special land uses that are not provided for in other zones;
- b) provide for sites with special natural characteristics that are not provided for in other zones; and
- c) facilitate development that is in keeping with the special characteristics of the site or its existing or intended special use, and that minimises any adverse impacts on surrounding land.

### **3.11.7 SP2 Infrastructure**

The SP2 Infrastructure zone has been applied to specific infrastructure in Buronga Gol Gol including both the Sturt and Silver City Highways and the Water and Sewage Treatment Plants. The area of land under this zone is approximately 72 hectares.

Other infrastructure and community facilities such as reticulation systems, electrical substations, telecommunication towers, educational establishments, health facilities among others are permitted and located in existing residential, business and industrial zones.

The objectives of the SP2 Infrastructure zone are:

- a) To provide for infrastructure and related uses; and
- b) To prevent development that is not compatible with, or that may detract from, the provision of infrastructure.

### **3.11.8 RE1 Public Recreation**

A number of parks and reserves within Buronga Gol Gol are zoned RE1 Public Recreation.

Specific sites included in this zone are James King Park, Buronga Wetlands Reserve, Carramar Drive Sporting Complex and Buronga Caravan Park Reserve. The zone covers approximately 80 hectares and has the following objectives.

- a) To enable land to be used for public open space or recreational purposes,
- b) To provide a range of recreational settings and activities and compatible land uses,
- c) To protect and enhance the natural environment for recreational purposes.

### **3.11.9 RE2 Private Recreation**

The Buronga Caravan Park is the only site in Buronga Gol Gol zoned RE2 Private Recreation and occupies 9 hectares. Other private tourism related activities and accommodation such as Edge Hotel, Gol Gol Hotel and River Gardens Holiday Park fall within the RU5 Village zone. As these privately-owned recreational facilities are permitted in the RU5 Village zone, rezoning of these sites is not anticipated.

The objectives of the RE2 Private Recreation zone are to:

- a) enable land to be used for private open space or recreational purposes;
- b) provide a range of recreational settings and activities and compatible land uses; and
- c) protect and enhance the natural environment for recreational purposes.

### **3.11.10 E2 Environmental Conservation**

A parcel of land located north of Buronga Gol Gol along Alcheringa Drive is the only site within the area zoned E2 Environmental Conservation due to its high conservation values.

The objectives of this zone are:

- a) To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values; and
- b) To prevent development that could destroy, damage or otherwise have an adverse effect on those values.

#### **3.11.11 E3 Environmental Management**

The E3 Environmental Management zone currently applies to an area of land opposite the Midway precinct adjacent to the Sturt Highway in Buronga Gol Gol.

This area is considered to have special ecological attributes and geotechnical constraints but with capacity to accommodate a limited range of development including 'dwelling houses'.

The minimum lot size applied to this zone in the lot size map of the WLEP 2011 is 10,000 hectares. This minimum lot size requires reviewing and amending, particularly in terms of the aim of the zone and the reason for the application of both the zone and minimum lot size.

The objectives of the zone are to:

- a) protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values; and
- b) provide for a limited range of development that does not have an adverse effect on those values.

#### **3.11.12 W1 Natural Waterways**

The W1 Natural Waterways zone applies to sections of the Murray River outside the current built-up and developed areas of Buronga Gol Gol. It is also applied to the entire length of the Gol Gol Creek. This ensures that these stretches of waterways are protected for their ecological and scenic values.

The objectives of the zone include:

- a) To protect the ecological and scenic values of natural waterways;
- b) To prevent development that would have an adverse effect on the natural values of waterways in this zone; and
- c) To provide for sustainable fishing industries and recreational fishing.

### **3.11.13 W2 Recreational Waterways**

This waterway zone applies to the section of the Murray River within the current built-up extent of Buronga Gol Gol. This zone allows the use of the river for water-based recreation, boating and water transport and development associated with fishing industries, such as natural water-based aquaculture and recreational fishing.

The objectives of this zone are to:

- a) protect the ecological, scenic and recreation values of recreational waterways;
- b) allow for water-based recreation and related uses; and
- c) provide for sustainable fishing industries and recreational fishing.

In addition to the zones listed above, the WLEP 2011 contains miscellaneous and local provisions that deal with a range of general and specific development issues in the Shire.

Relevant provisions for Buronga Gol Gol relate to issues such as urban land release, terrestrial biodiversity, development on river front land, flood planning, heritage conservation, bush fire hazard reduction, eco-tourist facilities and earthworks.

The provisions in the WLEP 2011 applied to the above issues are geared toward ensuring that development occurs in a logical, sustainable and cost-effective manner without causing significant adverse cultural and environmental impacts in the area.

### **3.12 Wentworth Shire Development Control Plan 2011**

The Wentworth Shire Development Control Plan 2011 (WSDCP 2011) is a non-statutory document that provides detailed planning and design guidelines and standards for informing land use planning and development decisions, as well as addressing development issues at a local level.

The WSDCP 2011 seeks to encourage quality urban design, a high level of residential amenity and a sustainable approach to development within the Shire.

The WSDCP 2011 contains provisions for guiding and controlling development in general, as well as in specific land use zones and sites within the Wentworth Shire LGA.

In relation to Buronga Gol Gol, the relevant development controls are outlined below.

### **3.12.1 Locality Objectives for Buronga Gol Gol**

The local vision statement of the WDCP 2011 for Buronga Gol Gol is to encourage balanced development by ensuring availability of appropriate infrastructure for a thriving and vibrant community with a rural and village lifestyle whilst conserving environmental resources. This vision is supported by specific locality objectives, which include:

- a) An environmentally sustainable approach to urban development by minimising non-renewable energy use and car dependence; encouraging greater self-containment of new local neighbourhoods and protecting key environmental and cultural assets;
- b) Safe, convenient and attractive neighbourhoods that meet the diverse and changing needs of the community and offers a wide choice of housing, leisure, local employment opportunities and associated community and commercial facilities;
- c) A coherent urban system of compact walkable neighbourhoods which cluster to form a high degree of street connectivity;
- d) A site responsive approach to urban development that supports and enhances the context in which it is located, strengthens local character and identity, and promotes a sense of community;
- e) A movement network which has a managed street network that clearly distinguishes between arterial routes and local streets, establishes good internal and external access for residents, maximises safety, encourages walking and cycling, supports public transport patronage and minimises the impact of through traffic;
- f) A network of meaningful, well located parks and recreation areas that offer a variety of safe, appropriate and attractive public open spaces;
- g) Design of neighbourhoods considering environmental constraints including soil erosion, urban water management, buffers and environmental protection; and
- h) Equity in the provision of public utilities in a timely, cost efficient and effective manner.

### **3.12.2 General Development Controls**

These controls relate to general matters that need to be considered in assessing and determining development proposals to achieve and maintain an acceptable level of built and natural environments in the area.

Pertinent matters covered by these controls include biodiversity management, koala habitat protection, flood affected land, vehicular access and parking, crime prevention through environmental design and disability access standards.

### **3.12.3 Residential Development Controls**

The overall objective of the residential development controls is to promote the design and development of sustainable residential houses that responds to specific site conditions, complements adjoining properties and enhances amenity of the neighbourhood.

The controls outline the site and building design requirements for residential houses within Buronga Gol Gol except the urban land release area. The controls relate specifically to issues such as site and context analysis, site coverage, streetscapes, building setbacks (from all boundaries), walls on boundaries, building heights and overshadowing, overlooking, energy efficiency and solar access, car parking and vehicle access, and fencing and retaining walls.

These controls generally apply to the RU5 Village and R5 Large Lot Residential zoned land in Buronga Gol Gol.

### **3.12.4 Rural Development Controls**

The rural development controls seek to ensure that all forms of rural activities and development are conducted in a sustainable and appropriate manner to minimise the impacts on adjoining land uses and the natural environment.

The controls cover a range of rural land use and development issues including intensive agriculture, subdivision, rural dwellings, river setbacks, effluent disposal, access, land capability assessment, rural land use conflict, rural sheds, rural industries, boarding and/or breeding kennels and hazardous chemical handling.

The controls are applicable to land zoned RU1 Primary Production in Buronga Gol Gol.

### **3.12.5 Commercial Development Controls**

The purpose of the commercial development controls is to ensure commercial development is designed to serve multiple functions and undertaken in a sustainable and appropriate manner.

The controls primarily pertain to the design process and assessment requirements of commercial development and restricted premises. Specific issues covered by the controls

include site analysis, site arrangement, building height, landscaping, car parking, pedestrian paving, advertising structures, water pollution and public consultation and referrals.

The controls are relevant to all business and commercial developments in Buronga Gol Gol irrespective of the land use zone.

#### **3.12.6 Industrial Development Controls**

The objective of the industrial development controls is to ensure industrial development occurs in a sustainable, safe and appropriate manner without adverse impact on adjacent land uses.

The controls prescribe requirements and guidelines for various aspects of industrial development including building design and materials, site analysis, setbacks, landscaping, fences, advertising structures, visual quality, subdivision (site arrangement), noise and vibration, industrial air pollution, industrial water pollution and buffer distances.

The controls are applicable to all kinds of industrial activities and development within Buronga Gol Gol regardless of the location, although the primary focus is the 1IN General Industrial zone.

#### **3.12.7 Site Specific Provisions**

The WSDCP 2011 contains site specific provisions that are applicable to land identified as urban release area in Buronga Gol Gol as per the urban release area map of the WLEP 2011.

The site-specific controls aim at ensuring that residential development in the area is matched by an appropriate level of infrastructure and services to support the development.

The controls relate specifically to road networks, landscaping, staging of residential land release, social and community infrastructure development, as well as the built environment which encapsulates the issues covered by the residential and commercial development controls.

### **3.13 Buronga Gol Gol Structure Plan 2005**

The Buronga Gol Gol Structure Plan (BGGSP) was adopted by Council in 2005 to provide the planning guidance necessary to ensure that future development meets the expectations of the local community and the wider regional community.

The structure plan examined a number of constraints in the area including urban development pattern, infrastructure and community facilities, demographic changes, flooding and riparian constraints, heritage and agricultural uses. The structure plan provided a framework for land rezoning, staged urban land release and sequencing of infrastructure delivery in Buronga Gol Gol.

The plan adopted guiding principles on a range of planning and development issues including land use mix, infrastructure servicing, subdivision and housing design, cultural heritage values, buffer zones, local open space and waterways and riparian management.

The structure plan additionally proposed:

- a) Logical containment of future residential expansion on non-flood prone land to the north east and east of Buronga and to the north and west of Gol Gol ;
- b) Focusing urban development toward the Midway Centre as the main community and commercial centre; and
- c) Concentration of industrial activities to northwest Buronga.

### **3.14 Buronga to Monak Interface Study (Tonkin Consulting, 2016)**

The Buronga to Monak Interface Study was prepared to identify a range of improvements required to address existing issues of the interface between the Sturt Highway and property boundaries within the Buronga to Monak highway corridor and cater for future development within the corridor.

The study investigated issues surrounding traffic flows, pedestrian safety, vehicular access, and subdivision and development proposals within the corridor.

Key issues the study identified along the Highway in Buronga Gol Gol include:

- a) High crash rates with significant number of injuries in the sections within the two towns
- b) Shared use path is narrow, of poor quality with a lack of continuity in various sections and poor wayfinding
- c) Footpath provision is inconsistent.

The study proposed a range of short to long term treatment options, including the following:

- i. Upgrading major junctions with the Highway to provide appropriate storage/deceleration lanes and allowance for signalisation and street lighting;
- ii. Providing a contentious, wide and better sign posted shared use path from the Chaffey Bridge through to Trentham Cliffs;
- iii. Providing a central painted medial for the full length of the Highway between Buronga and Gol Gol to assist with access to abutting properties and improve pedestrian crossing opportunities; and
- iv. Reviewing the speed limits between the townships and east Gol Gol.

### **3.15 Buronga Riverfront Master Plan**

The Buronga Riverfront Masterplan was prepared to guide improvements to the amenity and picturesque views of the riverfront precinct. The vision of the masterplan aims to improve access and enhance recreational opportunities the site offers to the community whilst maintaining and celebrating the natural and cultural attributes. The objectives of the masterplan are to:

- celebrate the existing natural setting
- provide improved amenity and opportunity for active and passive recreation
- offer better links to existing facilities
- create community ownership of the overall vision for the precinct.

Key projects identified by the masterplan for enhancing the serviceability of the precinct include:

- Community picnic areas on the western and eastern sides of the George Chaffey Bridge
- Track and footpath rationalisation and controlled access
- Improved entry to the shire, bridge embankment beautification visible from the George Chaffey Bridge
- Directional and interpretive signage and trail markers
- Construction of a boat ramp and pontoon/canoe launch near the bridge.

These improvement projects in the masterplan would be reinforced in the structure plan.

### **3.16 Developer Charge/Contribution Plans**

Wentworth Shire Council has prepared two types of developer charge plans; namely Development Servicing Plans under section 64 of the Local Government Act 1993 and

Development Contribution Plan under Section 7.12 of the Environmental Planning and Assessment Act 1979. These provide guidance and advice as to how developers are charged towards the capital cost of infrastructure and facilities.

#### **3.16.1 Section 7.12 Development Contribution Plan**

This plan authorises Wentworth Shire Council to require a contribution towards the provision and augmentation of public infrastructure and facilities to assist with maintaining and enhancing amenity and service delivery within the shire. The public infrastructure and facilities covered in the plan include roads and traffic facilities, shared ways and footpaths, community facilities, parks and open spaces. The plan provides fixed levy rates of 0.5% for developments with estimated cost of \$100,001-\$200,000 and 1% for those above \$200,000. The plan provides that payment of the levy will be required for all affected new development prior to the issue of construction certificate.

#### **3.16.2 Section 64 Development Servicing Plans**

Wentworth Shire Council has two Section 64 development servicing plans, being Section 64 Development Servicing Plan No 1–Water Supply and Sewerage Services and Section 64 Development Servicing Plan No 2–Stormwater Infrastructure. Both plans are applicable to Buronga Gol Gol. The primary purpose of the plans is to enable Council to require new developments in Buronga Gol Gol to pay charges towards the provision and augmentation of water supply, sewerage and stormwater infrastructure in the area. The plans impose a contribution rate of \$0.94 per m<sup>2</sup> of the area to be subdivided for stormwater infrastructure, and developer servicing charges of \$1418, \$1537 and \$7417 per equivalent tenement for filtered water, raw water and sewer respectively. The plans require contribution charges to be paid in full prior to the release of the final plan of subdivision (i.e. subdivision certificate).

### **3.17 The way forward**

The planning and policy documents have highlighted important strategic directions and issues that are crucial to the future development of Buronga Gol Gol. These include, but are not limited to, a sustainable built environment, land and housing affordability, adequate and quality infrastructure, economic growth and job creation, infrastructure finance and natural environment protection and enhancement. The Buronga Gol Gol Structure Plan will need to

incorporate and address these issues, as well as facilitate realisation of the objectives of these strategic documents and/or improve on their achievements locally.

It is noted that the zonings and operation of the WLEP 2011 does not respond to some existing and emerging needs and aspirations of residents of Buronga Gol Gol in the following ways:

- a) Current and future commercial/retail activity centres are not separately identified;
- b) Future open spaces and recreation areas as well as some existing ones are not identified;
- c) The land use zone and minimum lot sizes applied to certain land parcels do not reflect the predominant uses of these lands; and
- d) Inconsistent minimum lot sizes have been applied to adjoining lots within the same zone.

The BGGSP will need to include proposals that address these shortfalls in the WLEP 2011.

## **Chapter 4 Public Consultation**

### **4.1 Purpose of consultation**

Extensive consultation with the community and relevant stakeholders has been undertaken to enable the collection and consideration of the aspirations, values and concerns of different individuals, groups and agencies in developing the structure plan. The specific purpose of the consultation was to:

- a) Communicate and inform the community and stakeholders of the process and key messages of the Structure Plan;
- b) Obtain feedback and input on the structure planning process;
- c) Ascertain and understand community and stakeholder views and opinions to inform the Structure Plan;
- d) Identify issues and obtain community input on ways to resolve issues;
- e) Assist in developing a 'vision' for the town; and
- f) Gain public ownership of the resultant Structure Plan.

### **4.2 Consultation process**

Following consideration and resolution by Council, the draft Buronga Gol Gol Structure Plan was publicly exhibited for 32 days from 09 May to 09 June 2020. The draft structure plan was notified and made available for viewing on Council's website, as well as advertised in Sunraysia Daily and Mildura Weekly newspapers and posted on Council's Facebook page for public comments and feedback. Letter mailouts were sent directly to affected landowners whose properties have been proposed for rezoning or other developments. The draft structure plan was also referred to relevant state agencies, local businesses and community groups for comment and feedback (refer Attachment 1). Face-to-face workshops or information sessions originally planned could not be held due to the recent COVID-19 restrictions.

### **4.3 Outcome of consultation**

Council received eighteen (18) submissions at the end of the exhibition period. The submissions were generally in support of the draft structure plan. The main issues raised by the submitters included:

- i. the need for improved pedestrian access and safety;
- ii. the need to ensure connectivity within neighbourhoods and promote free flow of local traffic;
- iii. minimising the impact of development on the functionality of the highways;
- iv. provision of buffers at land use interfaces to minimise land use conflicts;
- v. the need to extend services (water & sewer) to rural residential areas;
- vi. request for a variety of minimum lot sizes in the industrial area;
- vii. the need for water efficiency practices; and
- viii. minimising the impact of urban development on remnant vegetation, biodiversity and cultural heritage.

These issues were reviewed and considered by Council to inform the final structure plan. A detailed summary of the points made in the submissions and Council's responses (including adjustments made to the draft structure plan) is provided in Attachment 2.

## **Chapter 5 Population and Demographics**

This chapter analyses the population growth trends and demographic characteristics of the Buronga Gol Gol study area. This will determine the type of land uses, infrastructure and community facilities required to adequately meet the needs of the residents now and in the future.

### **5.1 Population trends**

Buronga Gol Gol was home to 2,735 people in 2016, which was an increase of 204 persons (8.1%) from the area's resident population of 2,531 people in 2011 (refer Figure 2.4). This indicates an annual population growth rate of 1.6% between 2011 and 2016, which is nearly three times the Wentworth Shire's growth rate of 0.6% over the same period.

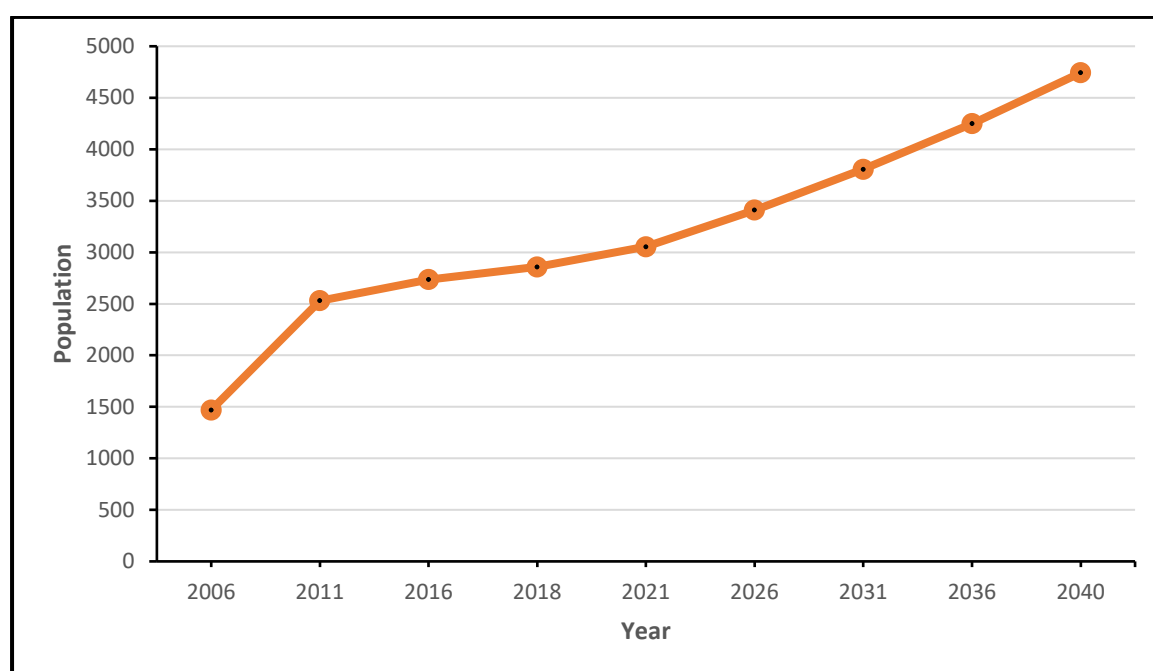
As the main growth area in the Wentworth Shire, most of the recent population growth in the Shire has occurred in and around the Buronga Gol Gol area. This is evidenced by the fact that 61% (66) of the total 109 development approvals granted for new dwellings in the Shire between 2016 and 2018 were in Buronga Gol Gol.

Based on this trend of residential development, it has been assumed that 61% of the population increase (248 persons) the Shire experienced between 2016 and 2018 occurred in Buronga Gol Gol. With this assumption, it has been determined that Buronga Gol Gol had a resident population of 2,859 in 2018, which indicates an increase of 124 persons (4.5%) and an annual population growth rate of 2.2% over the two-year period.

These demographic changes suggest that Buronga Gol Gol has experienced rapid growth, bucking the trend in rural areas of Australia that are characterised by very slow population growth or decline, due to the migration of residents from small townships to regional cities. This appears to be the case for Mildura, which is currently growing at a rate of 1.3% and surrounding towns such as Buronga Gol Gol.

As indicated in Figure 5.1, the population of Buronga Gol Gol is projected to reach 4,742 people in 2040 at an annual growth rate of 2.8%. This population growth will be driven by the ongoing rapid residential development which is largely in response to housing demand

overflow from Mildura. This growth trend will further result in an increased demand for land for various purposes, particularly residential housing.



**Figure 5.1: Population growth trend for Buronga Gol Gol**

## 5.2 Demographic structure

Table 5.1 summarises the key aspects of the demographics of Buronga Gol Gol residents. The Table indicates that of the total residents of Buronga Gol Gol, 51% are male and 49% are female, which is slightly different from the NSW and Australian gender distribution pattern (where females constitute more than half of the population at both the state and national level). This could partly be explained by Buronga Gol Gol's economic base being dominated by agriculture and its allied manufacturing industries which generally attracts a more male orientated workforce (i.e. currently employ more males than females).

The median age of Buronga Gol Gol residents increased from 37 in 2011 to 38 in 2016, which was on par with that of NSW and Australia. Consistent with the general trend in regional areas, nearly 50% of Buronga Gol Gol residents were in the 40 years and over cohort. Residents aged 45 years and over increased by more than 10% from 1,011 in 2011 to 1,116 in 2016, substantiating Buronga Gol Gol's ageing population as presented in Figure 5.2. While this could be due to the general exodus of young people from rural towns to regional centres

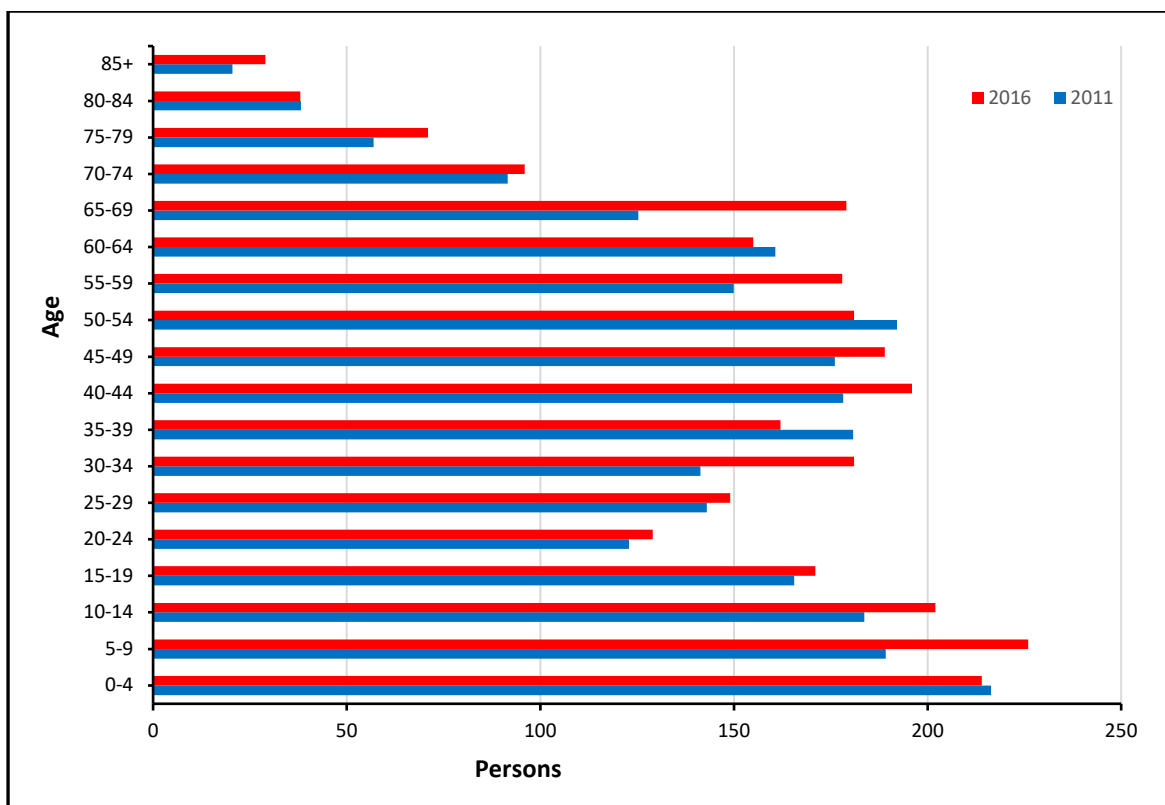
and major cities in search of better opportunities, it is also symptomatic of the nationwide trend towards an ageing population.

Children aged 0-19 years make up 30% of the population of Buronga Gol, which is significantly above the NSW and Australian average of 25% for this age group. In addition, an estimated 171 children were within the secondary school cohort of 15-19 years. The relatively high child population could be attributed to young and growing families choosing to reside in Buronga Gol Gol due to the presence of balanced idyllic rural-residential living areas and affordable housing as an alternative to the predominantly urbanised Mildura.

The demographic structure of Buronga Gol Gol has implications for choice of residential locations and housing types, as well as demand for community facilities and services associated with different age groups including health services, education and childcare facilities and recreation.

**Table 5.1: Comparative information on demographic structure of Buronga Gol Gol**

Demographic Structure	Buronga Gol Gol	Wentworth LGA	NSW	Australia
<b>Gender Distribution</b>				
Male	51%	52%	49%	49%
Female	49%	48%	51%	51%
Median Age	38	44	38	38
<b>Age Profile</b>				
0-14 years	23%	19%	19%	19%
15-24 years	11%	11%	13%	13%
25-39 years	18%	15%	21%	21%
40-64 years	33%	35%	32%	32%
65+ years	15%	20%	15%	15%



**Figure 5.2: Age Structure of the Buronga Gol Gol Residents**

### 5.3 Living characteristics

In Buronga Gol Gol, of the 2,098 residents aged 15 years and over in 2016, 58% were married and around 10% were either separated or divorced (refer Table 5.2). This marital rate is significantly above the average marriage rate of 49% for NSW and 48% for Australia, which indicates that marriage remains a strong institution in Buronga Gol Gol just like many rural towns in Australia.

Buronga Gol Gol has a total of 947 households of which 75% are classified as 'family households', with 'single person households' and 'group households' constituting 23% and 2% respectively. It is noted that between 2011 and 2016, the number of family households decreased 6.5% while single person households grew to 8.5%. Notwithstanding this, the proportion of couple families with children increased from 46% in 2011 to 49% in 2016 which indicates Buronga Gol Gol appeals to young families seeking affordable housing or rural living opportunities in close proximity to Mildura.

The mean household size in Buronga Gol Gol decreased from 2.7 persons in 2011 to 2.6 persons in 2016, which is on par with the NSW average and also consistent with the changing household structures towards fewer person(s) per household throughout Australia.

These household characteristics and living arrangements call for increased housing diversity including lifestyle houses on larger lots, medium density housing and smaller affordable dwellings such as townhouses and units, to best accommodate the different household structures and compositions. In particular, Buronga Gol Gol's ageing population is expected to change household structure to fewer persons per household which can generate substantial demand for new dwellings. Therefore, future housing needs should be determined using a lower average household size of 2.4 given the changing age structure.

**Table 5.2: Comparative information on selected living characteristics for Buronga Gol Gol**

Living Characteristics	Buronga Gol Gol	Wentworth LGA	NSW	Australia
<b>Marital Characteristics</b>				
Married	58%	52%	49%	48%
Separated	3%	4%	3%	3%
Divorced	7%	8%	8%	9%
Widowed	3%	6%	5%	5%
Never Married	29%	30%	34%	35%
<b>Household Profile</b>				
Total Households	947	2,420	2,604,306	8,286,084
Mean Household Size	2.6	2.4	2.6	2.6
Family households	75%	71%	72%	71%
Single households	23%	27%	24%	24%
Group households	2%	4%	4%	4%
<b>Family Characteristics</b>				
Total Families	717	1,744	1,940,226	6,070,313
Couple families with children	49%	39%	46%	45%
Couple family without children	39%	45%	37%	38%
One parent family	11%	15%	16%	16%
Other family	1%	1%	1%	1%

## 5.4 Socio-cultural characteristics

Table 5.3 reveals that in 2016, of the 2,054 persons aged 15 years and over in Buronga Gol Gol, more than half (57.3%) had completed at least Year 12 with nearly a quarter of the total

having attained either a diploma or degree. Whilst this indicates the availability of a moderately educated to highly skilled workforce to support both the local and regional economy, it also provides credence to Buronga Gol Gol's role of providing an affordable housing alternative to the working population in Mildura. The inhabitants of Buronga Gol Gol have a relatively diverse ancestral background with the most common ancestries being Australian (40.5%), English (34.0%), Scottish (9.7%), Irish (8.4%) and Italian (7.4%). In addition, 19% of the residents have at least one parent born overseas although the majority 81% have both parents born in Australia.

Of the total residents in Buronga Gol Gol, 52% have Christian beliefs with adherents of religions such as Buddhism, Hinduism and Islam constituting less than 1%, while 37.7% have secular or no religious beliefs. This high proportion of persons identifying as Christians in Buronga Gol Gol is consistent with state and national averages, which are all above 50% and also reflects Australia's Judeo-Christian heritage.

In Buronga Gol Gol, the indigenous population accounts for 4.7% of the population, which is significantly higher than the NSW average of 2.9%. This is consistent with the general trends that an increasing Aboriginal population in NSW lives in the western sector of the state. These socio-cultural characteristics have implications for the local and regional economies, housing, and provision of community facilities and services. The planning and provision of community services should support the unique needs and interests of the different socio-cultural groups while at the same time promoting social cohesion and integration in the community.

**Table 5.3: Comparative information selected socio-cultural characteristics for Buronga Gol Gol**

Socio-cultural characteristics	Buronga Gol Gol	Wentworth LGA	NSW	Australia
<b>Educational Attainment</b>				
Degree	12.7%	9.2%	23.4%	22.0%
Diploma	10.2%	6.6%	8.9%	8.9%
Certificate level I-IV	22.0%	18.9%	14.9%	15.8%
Year 12	12.4%	9.7%	15.3%	15.7%
Year 11	8.3%	7.8%	3.3%	4.9%
Year 10	11.9%	13.4%	11.5%	10.8%
Year 9 or below	10.6%	14.3%	8.4%	8.0%
No educational attainment	0.4%	0.4%	0.9%	0.8%
Not stated	11.5%	17.3%	10.3%	10.4%
<b>Ancestry</b>				
Australian	34%	31%	23%	23%
English	29%	28%	23%	25%
Scottish	8%	8%	6%	6%
Irish	7%	7%	8%	8%
Italian	6%	7%	3%	3%
Other	16%	19%	37%	35%
<b>Birth Place of Parents</b>				
Both parents born overseas	10.8%	9.3%	39.8%	37.1%
Father only born overseas	3.94%	3.8%	6.6%	6.9%
Mother only born overseas	3.2%	2.7%	4.7%	5.0%
Both parents born in Australia	82.0%	84.2%	48.9%	51.0%
<b>Religion</b>				
Christianity	52.4%	51.5%	55.2%	52.1%
Buddhism	0.4%	0.3%	2.8%	2.4%
Hinduism	0.1%	0.1%	2.4%	1.9%
Islam	0.2%	0.2%	3.6%	2.6%
Judaism	0.0%	0.0%	0.5%	0.4%
Other Religions	0.2%	0.9%	0.9%	0.9%
Secular Beliefs or No Religious Affiliation	37.5%	33.4%	25.5%	30.1%
Religious affiliation not stated	9.2%	13.6%	9.1%	9.6%
<b>Indigenous people</b>	4.7%	9.5%	2.9%	2.8%

## **5.5 The way forward**

The structure planning process must address the needs of a population that is not only growing but made up of significant proportions of diverse and sometimes contrasting demographic groups. The structure plan must introduce a number of group appropriate land use planning interventions rather one size fits all approach in order to adequately meet the needs of the various segments of the community. Key focus issues for the structure plan in this regard may include:

- i. Ensuring adequate supply of residential land to ensure housing affordability;
- ii. Increasing residential housing diversity to best accommodate different household structures, age groups and lifestyles; and
- iii. Delivering a range of community services and facilities that support the needs and interests of the diverse residents.

## Chapter 6 Built Environment

This chapter examines existing land use types and trends and pattern of physical development in the Buronga Gol Gol study area. This provides the basis for determining land area and use requirements for supporting future growth and development in the study area.

### 6.1 Land uses

Buronga Gol Gol has a linear urban form with a blend of residential, rural residential, industrial, commercial, community-related and rural land uses. The spatial structure and land use mix reflects socio-economic trends as much as previous planning regimes. Table 6.1 and Figure 6.1 provide a summary of the land areas under each land use within the Buronga Gol Gol study area.

Agriculture is the predominant land use within the Buronga Gol Gol study area and occupies 51.5% of the total land area. This is reflective of both the local and regional economies which are dominated by agriculture and related industries including horticulture, pastoral farming and beverage manufacturing. Although most of the agricultural land uses occur on rural land to the north of the study area, significant horticultural activities are located on land zoned for urban land uses directly interfacing residential development.

Residential land uses occupy an area of 287 hectares and form a linear settlement pattern along the Sturt and Silver City Highways, albeit interspersed by horticultural farm lands around the Midway Area. The residential land uses in Buronga Gol Gol can be broadly categorised as:

- i) low-medium density housing, which incorporates the main township areas, and
- ii) large lot residential housing, which is confined to east Gol Gol.

The residential area has experienced significant growth and development in recent times due to housing demand spill over from Mildura and it contains about 75-80% of dwelling houses in Buronga Gol Gol.

Recent low-medium density residential development in both Buronga and Gol Gol has focused towards the Midway area, creating a gradual merging of the two townships, while the large lot residential area has been expanding eastwards away from Gol Gol township. The

Midway area will be reinforced in the Structure Plan to facilitate the merging of the Buronga and Gol Gol townships into one contiguous, compact built environment.

Rural residential land use covers a land area of 139 hectares and is mainly concentrated to Buronga West and northeast Gol Gol, which already exhibit some form of rural lifestyle settlement pattern. The rural residential land uses mainly comprise of residential dwellings and hobby farms occurring on rural zoned allotments. The land area of the rural land use demonstrates the strong interest in large lot residential and rural/environmental lifestyle living in Buronga Gol Gol. This demand is reflected in the Shire as a whole. Alternative zones should be considered for these areas to reflect the on-ground land use situation and satisfy demand for future rural residential development.

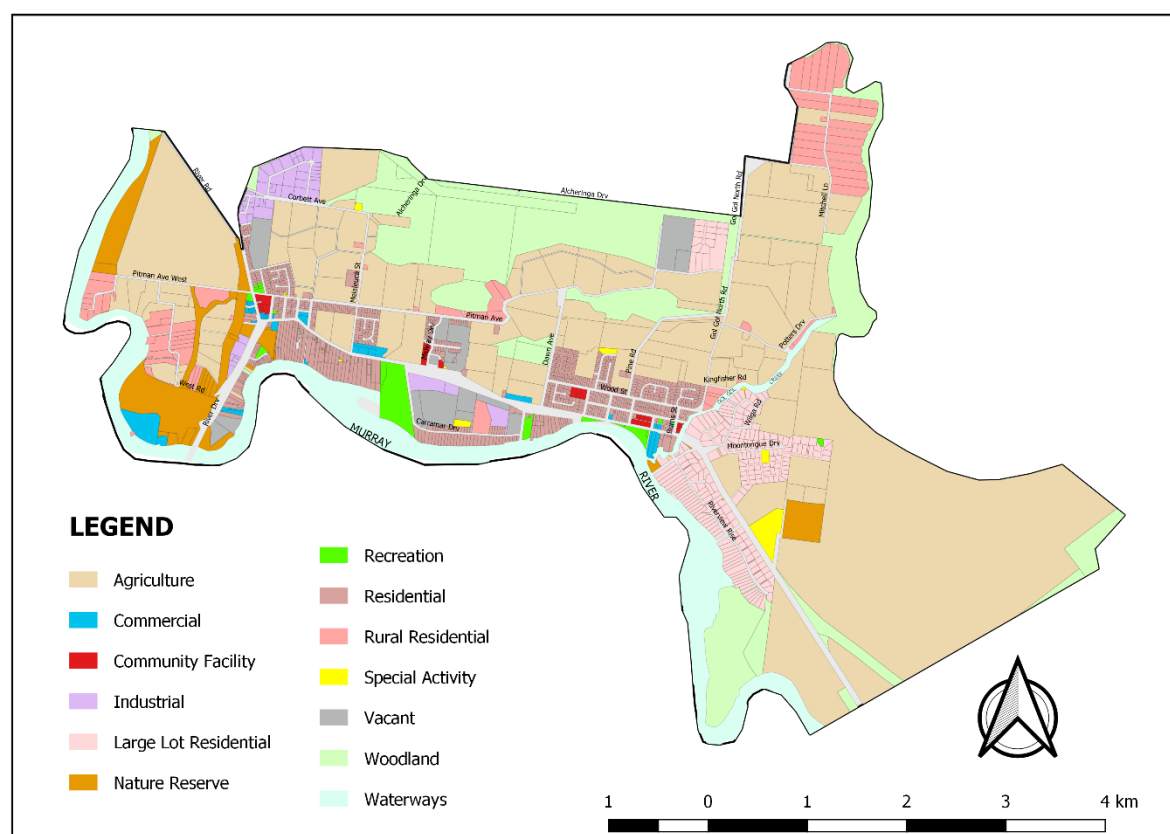
Industrial land uses occupy about 33 hectares and are predominantly contained to the industrial precinct located in the north-western corner of Buronga. However, there is also additional industrial activity dispersed within the study area on land south west and adjacent to the Sturt Highway. The industrial land uses include light industrial activities, warehousing and packaging and transport. It is noted that the industrial precinct has direct interface with residential zoned land.

Commercial land uses cover approximately 1.3% of the total land area and are located along the Silver City and Sturt Highways. The commercial activities include general shops, cafes', bakeries and business premises, all of which are scattered along segments of the highways within the Buronga Gol Gol study area. The spatial pattern of the commercial activities reflects the absence of a well-defined commercial precinct or town centre in Buronga Gol Gol.

The Buronga Gol Gol area is also supported by community-related land uses such as parks, open spaces and recreational facilities that are located at vantage points and cumulatively occupy about 6% of the Buronga Gol Gol study area.

**Table 6.1: Land area of existing land uses**

Land Use	Area (ha)	%
Residential	167	6.0
Large Lot Residential	120	4.3
Commercial	36	1.3
Community Facility	8	0.3
Industrial	33	1.2
Public Recreation	24	0.9
Rural Residential	139	5.0
Agriculture	1436	51.5
Woodland	440	15.8
Reserve/Park	116	4.2
Special Activity	12	0.4
Vacant	88	3.2
Roads & Access	168	6.0
<b>Total</b>	<b>2787</b>	<b>100</b>

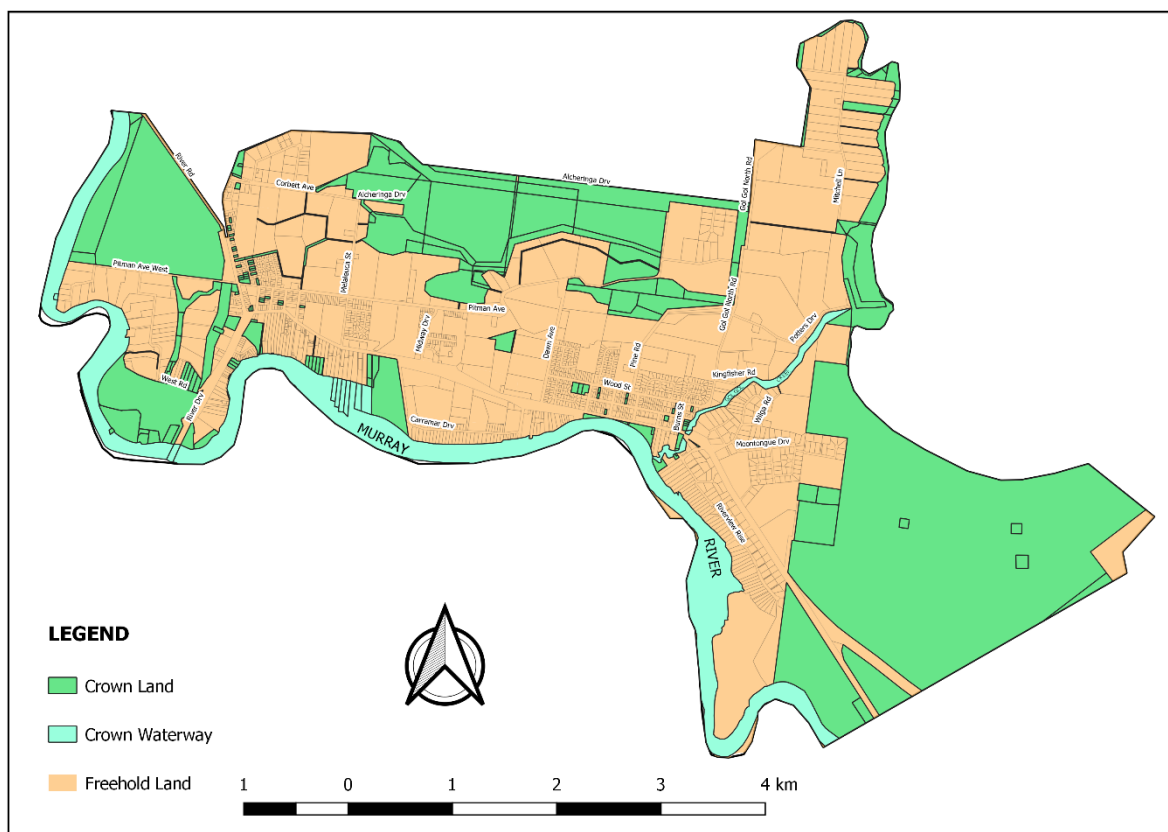


**Figure 6.1: Existing land uses**

## 6.2 Land tenure

The land tenure systems operating in the Buronga Gol Gol study area are Crown Land and Freehold Land as depicted in Figure 6.2. Crown and Freehold lands cover 50.2% (1560 ha) and 49.8% (1549 ha) of the study area respectively. Significant portions of the Crown land are located to the north of Pitman Avenue immediately adjacent to existing zoned RU5 Village land and in east Gol Gol on the Sturt Highway adjacent existing zoned Large Lot Residential land. Portions of the Crown land coincides with major nature reserves and recreational areas including a nature reserve zoned E2 Environmental Conservation Management north of Pitman Avenue, the Buronga Wetlands Reserve at the intersection of the Sturt and Silver City Highways, Buronga Caravan Park adjacent the Murray River near the Chaffey Bridge on the Sturt Highway and further to the east in three locations along the Sturt Highway including Carramar Drive Sporting Complex, Drings Hill Reserve and James King Park, which all front the Murray River. These areas are noted as reserves and reserved from sale/development and form the major building blocks for the open space system for Buronga Gol Gol. North of Pittman Avenue extended to the west of the Silver City Highway is another significant area of Crown land. Beside the open spaces, the majority of the Crown land is zoned RU1 Primary Production and leased to private farmers for agricultural purposes.

The remainder of the study area is freehold land. The freehold land incorporates the existing and future urban land in Buronga Gol Gol. This freehold ownership of the urban land will facilitate and ease the process involved in releasing the land for development.



**Figure 6.2: Land ownership pattern in Buronga Gol Gol**

### 6.3 Lot size and density

Table 6.2 and Figure 6.3 present the structure of landholdings within the Buronga Gol Gol study area. The Buronga Gol Gol study area has approximately 1,551 lots forming a fragmented land holding pattern. Table 6.2 indicates that 69.2% of the land holdings in Buronga Gol Gol are between less than 500 m<sup>2</sup> to 2,500 m<sup>2</sup>. This land holding structure does to a large extent reflect the urban focus of the study area as much as the historical subdivision patterns within the area.

Figure 6.3 reveals a clear distinction between the lot sizes of land located to the north and south of the Sturt Highway in the existing residential area of Buronga Gol Gol. Land that is north of the Sturt Highway in the existing residential area is subdivided into lots ranging from less than 500 m<sup>2</sup> to around 2,500 m<sup>2</sup>. The lots in the residential area to the south of the highway are larger with many ranging from 2,500 m<sup>2</sup> upwards. The difference in the lot sizes is attributable to the land in the south being riverfront, flood prone and as such, largely suitable for large lot residential lifestyle.

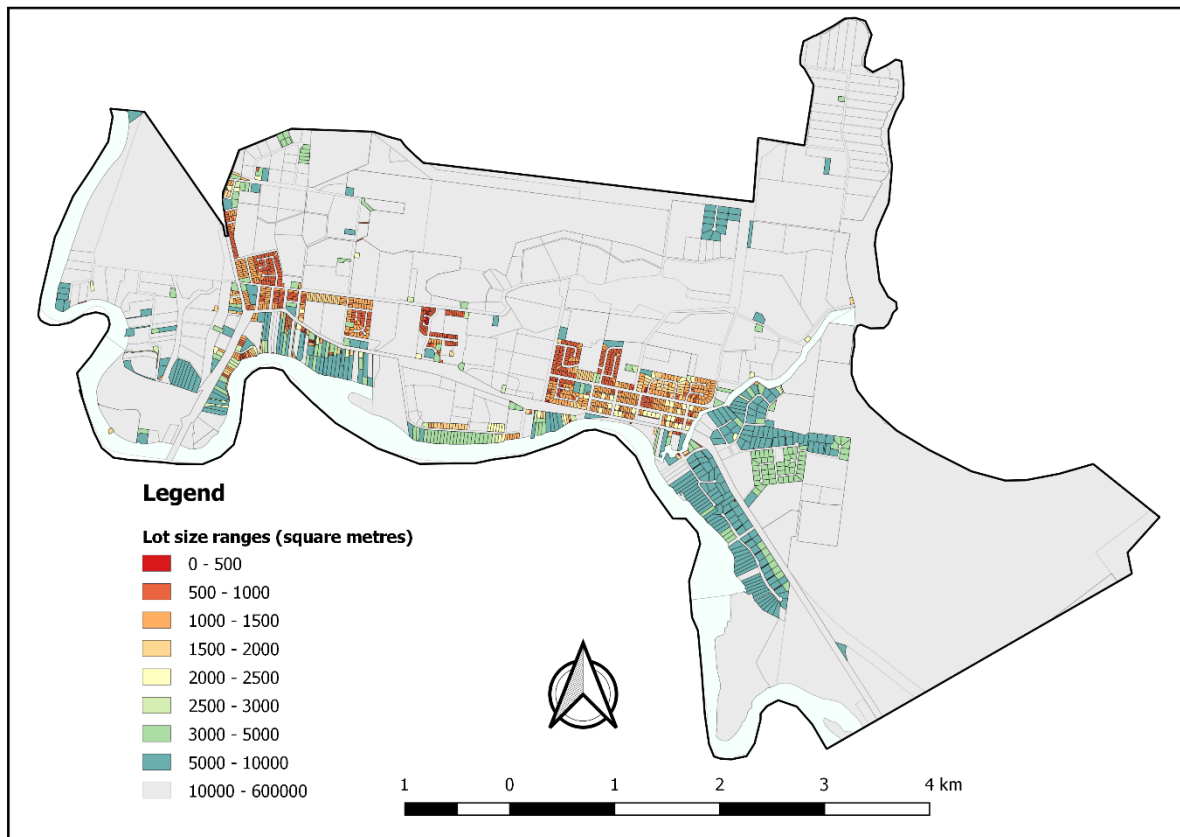
It is noted that the RU5 Village zone, which contains much of the residential area of Buronga Gol Gol has no prescribed minimum lot size under the WLEP 2011. The average lot size of the developed land in this zone has been determined as 1,603 m<sup>2</sup>. This provides an average gross density of 6.2 lots per hectare for Buronga Gol Gol, significantly lower than the average of 11 to 12 lots per hectare in other residential areas in NSW. However, lot sizes of recent subdivisions in the RU5 Village zone have been averaging around 850 m<sup>2</sup>, which is more practical and suitable for residential development.

In relation to R5 Large Lot Residential, the WLEP 2011 prescribes a minimum lot size of 3,000 m<sup>2</sup> and 5,000 m<sup>2</sup> for the zone in different parts of Buronga Gol Gol. The overall average lot size of existing developed areas in this zone is estimated at 6,542 m<sup>2</sup>. However, similar to the RU5 Village zone, the average lot size in recent large lot residential subdivisions has reduced to 3,500 m<sup>2</sup>, consistent with the minimum lot size for the zone.

It is anticipated that the trend toward smaller lot sizes in recent residential subdivisions will continue in the future in both RU5 Village and R5 Large Lot Residential zones. However, the minimum lot size applied to the R5 Large Lot Residential zone should not be reduced to less than 3,000 m<sup>2</sup> to ensure residents have adequate land to undertake the type of activities commensurate with rural lifestyle living in a rural setting. In addition, the Structure Plan will need to consider a prescribed minimum lot size for the RU5 Village zone to ensure that future subdivisions promote moderate residential densities while maintaining the rural outlook of Buronga Gol Gol.

**Table 6.2: Existing land holdings**

Lot size range	No. of existing lots	% of Total
0-500	48	3.1
500-1000	373	24.1
1000-1500	367	23.7
1500-2000	93	6.0
2000-2500	61	3.9
2500-3000	23	1.5
3000-5000	107	6.9
5000-10000	231	14.8
10000+	248	16.0
Total	1551	100



**Figure 6.3: Lot size ranges**

## 6.4 Residential land demand and supply

Residential land in Buronga Gol Gol falls under the RU5 Village and R5 Large Lot Residential zones. The demand for RU5 Village and R5 Large Lot Residential zoned land between 2012 and 2018 is estimated as 74 and 19 lots per annum respectively, which culminate into an annual average residential land take-up rate of 93 lots. This relatively strong residential land demand is attributable to a combination of regional and local factors including proximity of the Victorian regional centre of Mildura currently experiencing strong population growth, recent improvement in local infrastructure services, attractive rural residential lifestyle and amenity and relatively lower residential land prices. In particular, the residential land demand in Buronga Gol Gol is largely considered as ‘growth spill over’ from Mildura, which had approximately 20 years supply of zoned residential land (i.e. 445ha/5376 lots) in 2012 and faces urban expansion constraints (i.e. housing is encroaching on productive irrigation areas and greenfield development requires extensive drainage infrastructure) (Mildura Housing and Settlement Strategy Background Report, 2013). Given this situation, it is not unreasonable to expect the current increase demand for residential land in Buronga Gol Gol

to continue. This will be further supported by ongoing strategic infrastructure and investment projects to improve the liveability of the Buronga Gol Gol area.

In terms of residential land supply, it has been determined that the total existing undeveloped residential land in Buronga Gol Gol is 320 hectares, comprising 227 hectares in the RU5 Village zone and 93 hectares of R5 Large Lot Residential land. With allowances of 30% of the land for access, open space and other non-residential uses, the net developable land for RU5 Village and R5 Large Lot Residential is 159 hectares and 65 hectares respectively. Based on the average lot size of recent subdivisions and current annual take-up rate for RU5 Village and R5 Large Lot Residential zoned land, a summary of the existing developable residential land supply is provided in Table 6.3. Table 6.3 indicates Buronga Gol Gol has 25 years and 10 years supply of RU5 Village and R5 Large Lot Residential zoned land respectively. This suggests that under current circumstances while Buronga Gol Gol has an adequate long-term supply of RU5 Village zoned land, the R5 Large Lot Residential zoned land can only satisfy a short to medium-term demand in that zone.

It is noted that the supply of the residential land is dependent on a myriad of factors including ease of servicing, suitability for the expected housing demand, profitability of the land market and availability within the right timeframe and locations. In addition, there are substantial costs involved in servicing and/or redeveloping land for residential development. Servicing charges (charges to account for current or future expansion of infrastructure capacity) are significantly lower in Buronga Gol Gol than in Mildura (\$10,918 versus \$15,000 per average residential lot). Moreover, the average price of residential land in Buronga Gol Gol between 2017 and 2019 was \$133,000 only slightly below the Mildura average of \$154,982. These conditions act as an incentive to property developers to develop land in Buronga Gol Gol over Mildura or at least seek to place some of their portfolio on the NSW side of the Murray River, which is necessary for ensuring sustained residential land supply in Buronga Gol Gol.

Council's development application records between 2015 and 2019 indicate an average of six (6) residential subdivision development applications each year in Buronga Gol Gol. This relatively high residential subdivision rate is expected to continue into the future and thus ensure an ongoing supply of developed residential land. This theory is supported by developers liaising with Council concerning their concept plans or directly indicating their

intention to apply for and undertake subdivision approvals and works. However, given that a higher residential land demand rate is not unlikely based on the aforementioned factors, additional residential land needs to be identified to cater for any future increase in current demand rates to forestall a potential land supply shortfall, especially large lot residential land and its concomitant land and housing affordability issues.

**Table 6.3: Existing residential land supply under current demand rate and average lot size**

Zone	Undeveloped land (ha)	Developable land (ha)	Average lot size (m <sup>2</sup> )	Lots Yield (Additional Lots)	Demand rate	Years Supply
RU5 Village	227	159	850	1871	74	25
R5 Large Lot Residential	93	65	3500	186	19	10
<b>Total</b>	<b>320</b>	<b>224</b>	<b>N/A</b>	<b>2015</b>	<b>N/A</b>	<b>N/A</b>

## 6.5 Housing Stock and Development

In 2016, Buronga Gol Gol had a total housing stock of 1,081 dwellings of which 87% were occupied and 13% were unoccupied. The most popular occupied dwelling structure was the separate detached house (90%), with semi-detached and multi-unit housing types such as units, terrace and townhouses accounting for just 6%. The high proportion of separate detached housing stock indicates a homogenous housing typology and calls for increased housing diversity to make housing more affordable, as well as meet the needs of the diverse range of people living in Buronga Gol Gol, including the elderly and single person households.

Analysis of Council's approval records reveals an increasing trend in housing development in Buronga Gol Gol with a total of 170 development approvals granted for new dwellings between 2015 and 2019. This indicates a new dwelling approval rate of 34 per year with the total yearly approvals increasing steadily over the period as presented in Figure 6.5. The new housing development is largely located within recently developed residential subdivisions areas within Buronga Gol Gol.

The relatively strong housing growth in Buronga Gol Gol can be attributed to a range of factors, particularly Mildura's rapid population growth, which averages around 580 persons

per annum and its associated housing demand overflow. Other explaining factors include the availability of relatively affordable residential and rural residential land on the NSW side of the Murray River, encouraging people to choose Buronga Gol Gol over the regional city of Mildura which is located less than 5 km away.

It must, however, be noted that housing development in Buronga Gol Gol is strongly linked to availability of suitable residential land. As depicted in Figure 2.8, the area experienced a sharp decline in housing development in 2016 due to a limited supply of residential land as no residential subdivisions were completed in that year. However, this trend was reversed in 2017 when major residential subdivisions were completed and developed residential land became available. Therefore, it is vital to ensure there is an ongoing supply of readily available residential land to satisfy the current and anticipated future demand.

Housing prices in Buronga Gol Gol vary according to location from approximately \$150,000 to \$400,000 and above, particularly for properties with river frontage. The median house price is \$310,000, which compares positively with that of Mildura (\$385,000). This partly explains Buronga Gol Gol's strong appeal to investment and owner-occupier homebuilders alike. Housing supply and demand in Buronga Gol Gol is anticipated to increase in the future based on the various favourable local and regional factors outlined earlier. This demand will be driven and supported by significant residential subdivisions and commercial proposals currently being developed, under consideration or expected in the future (see Figure 6.5 and Attachment 3).

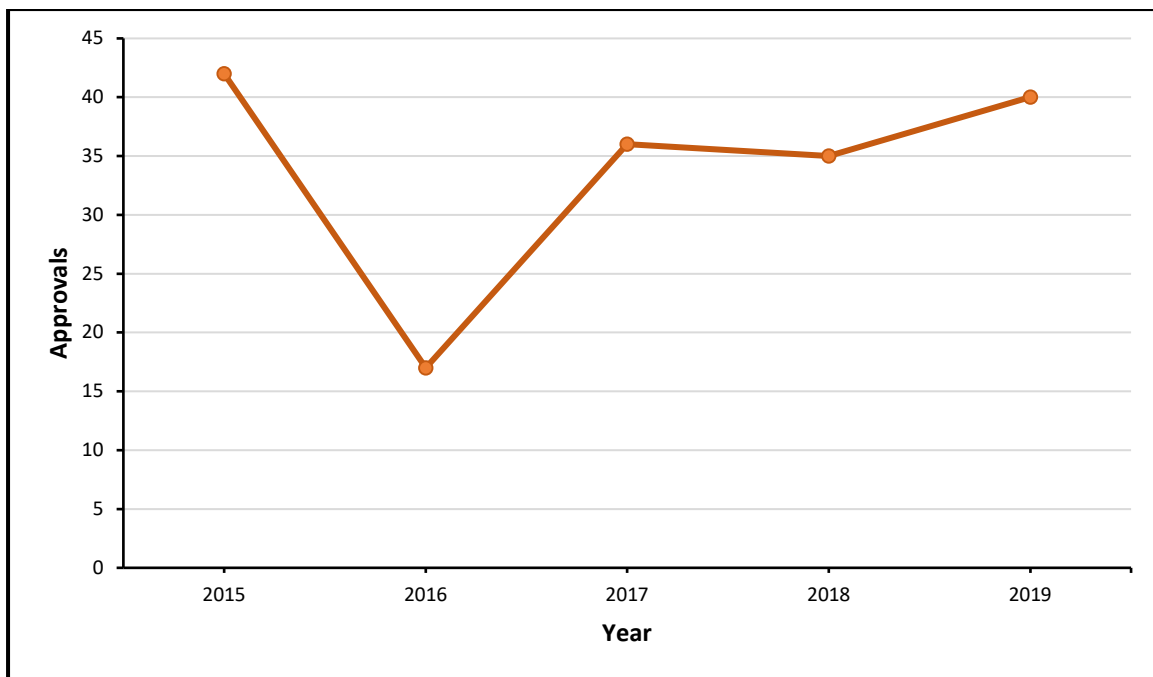


Figure 6.4: Housing Development Approvals in Buronga Gol Gol

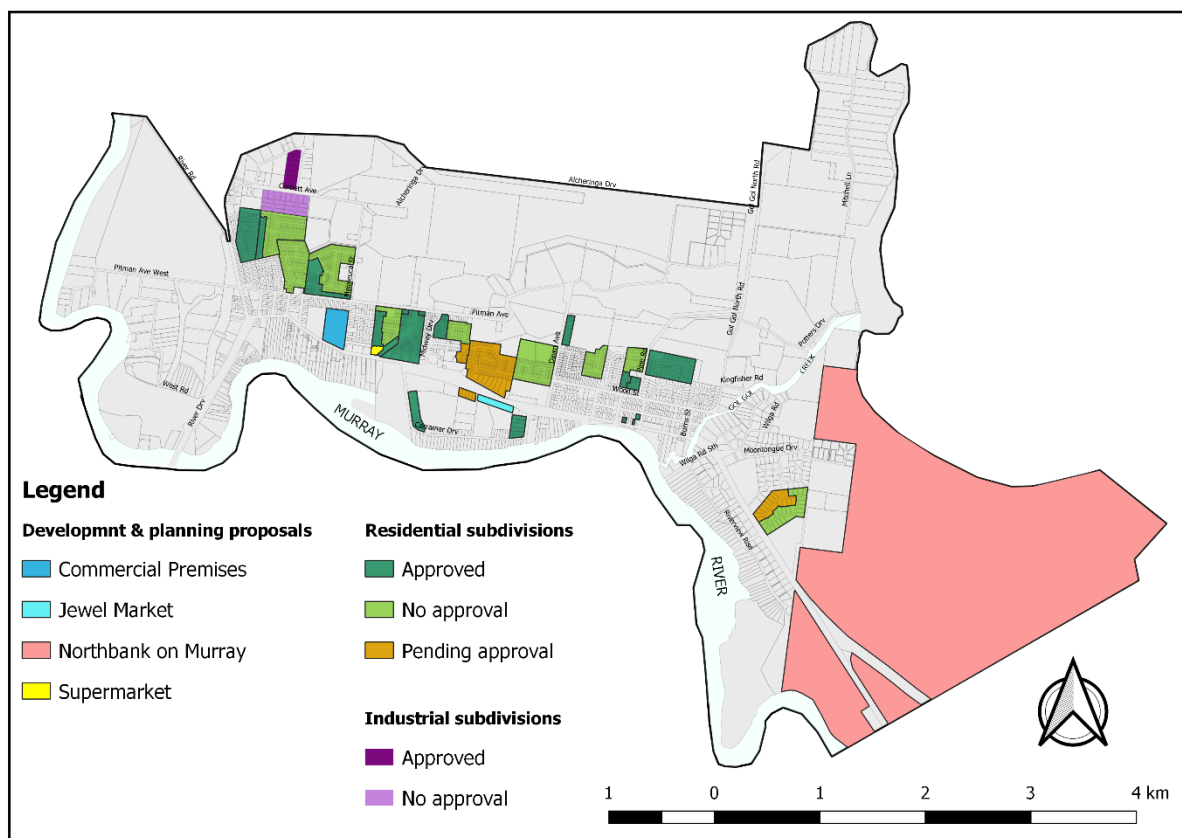


Figure 6.5: Proposed developments, concepts and planning proposals

## **6.6 Land use interface and conflicts**

There are a number of existing and potential land use interfaces within the Buronga Gol Gol study area that have or will have the potential to create land use conflicts and these need to be considered and conflicts mitigated. This section analyses existing and future land use interfaces to identify current and potential land use conflicts (refer Figures 6.5 & 6.6). Responses to the land use conflict issues are also discussed.

### **6.6.1 Industrial and urban lands**

The majority of existing industrial land uses within the Buronga Gol Gol study area are located within or adjacent to areas used or zoned for residential purposes. The prominent industrial areas are the Buronga industrial precinct located in north-west Buronga, the Midway industrial site, the Carramar industrial site, and the South-West industrial strip located along the Sturt Highway.

The Buronga industrial precinct and the Carramar industrial site both adjoin existing residential development and residential zoned land (i.e. RU5 Village land) with no formal buffer between these land use zones as shown in Figures 6.5 & 6.6. The potential conflicts that can arise from this industrial residential land use interface include noise, dust, odour, and air pollutants (gaseous and particle emissions) from industrial type activities. In the case of the Buronga industrial precinct, it is noted that residential development has not started on the adjoining residential zoned land, which provides an opportunity to develop buffers to separate the industrial and residential land uses.

Physical buffers to the residential development adjoining the Midway and Carramar industrial sites is not only difficult to achieve but also not a viable option in the long term as the land used for the industrial activities have the potential of being developed for urban purposes including residential in the medium to long term. As a result, the impacts of the industrial activities on surrounding houses should be closely monitored and addressed as required. Council should encourage and negotiate with the business operators to relocate their industrial activities to the Buronga industrial precinct in the long-term as urban land uses intensify in the area.

The issues associated with land use conflicts and the necessity for buffers to residential areas are not as significantly urgent just north of the George Chaffey Bridge. There is an existing

buffer zone, being a nature reserve, between South-West B6 zone industrial strip adjacent to the Sturt Highway and the existing agricultural and rural residential lands to the west.

Other general approaches that can be employed to mitigate the impact of industrial activities on residential and other sensitive land uses may include:

- i. adopting internal subdivision designs that allocate the least noise-sensitive land uses (for example, shopping centres, parks, sporting complexes) nearest to industrial area,
- ii. avoiding any avoidable impacts of industrial activities,
- iii. minimising the creation and discharge of waste through implementing best practice,
- iv. containing emissions within the individual industry site boundary or within the industrial estate,
- v. containing emissions within a buffer area outside the industrial estate, and
- vi. demonstrating that there is no unacceptable impact on nearby sensitive land uses.

#### **6.6.2 Agriculture and urban land uses**

There are many intensive agricultural uses occurring on or adjacent to urban zoned land in the Buronga Gol Gol study area. In particular, nearly all the existing residential areas and residential zoned lands (i.e. RU5 Village and R5 Large Lot Residential) within the study area have frontages to intensive agricultural land (refer Figures 6.5 & 6.6). This prevalence of direct rural residential interfaces, does to a large degree, reflect the rural nature of Buronga Gol Gol area, as much as the historical planning regime that did not incorporate buffers between residential land uses and intensive agriculture. The conflicts that arise from residential land abutting rural land uses include:

- i. Noise issues from farming equipment, livestock and traffic (transport),
- ii. Health concerns from spray drifts, dust and smoke,
- iii. Odour from livestock, agricultural fertilisers and chemicals,
- iv. Fire hazard from burning of pasture and stubble and if paddocks are not slashed regularly,
- v. Visual intrusion of urban landscapes by greenhouses and hail netting,
- vi. Nuisance and stock harassment by stray dogs, trespassers and vandalism,
- vii. Noxious exotic plant and weed species entering the rural landscape, and
- viii. Obstruction of livestock by urban fencing.

It is noted that almost all the residential zoned lands currently used for intensive agriculture have either existing residential subdivision approval or concept plan to develop them for residential purposes. This means that the conflicts associated with agricultural land uses impacting on residential areas will be eradicated in the near future. Consequently, buffers are only required at the interface of the residential zoned land and the intensive agricultural land in the northern part of the Buronga Gol Gol study area.

Currently, in the Buronga Gol Gol study area, a 20-metre vegetative buffer is considered suitable for addressing existing and potential conflicts between agricultural and residential areas. However, future residential subdivision designs should explore the possibility of separating the rural residential interface with roads, which can mitigate rural urban land use conflicts, as well as act as fire asset protection measures for residential houses adjacent to rural lands.

### **6.6.3 Major arterial roads**

The Buronga Gol Gol study area is traversed by the Sturt and Silver City Highways, which are major national freight routes. These highways carry high volumes of traffic including a large proportion of heavy vehicles on a daily basis.

However, the highways are abutted by various land uses including schools, residential houses, businesses and recreational areas (see Figures 6.5 & 6.6). The potential impact of the operation of the highways on these adjoining land uses include noise, safety concerns and limited accessibility. These impacts will need to be addressed through traffic treatments and urban design.

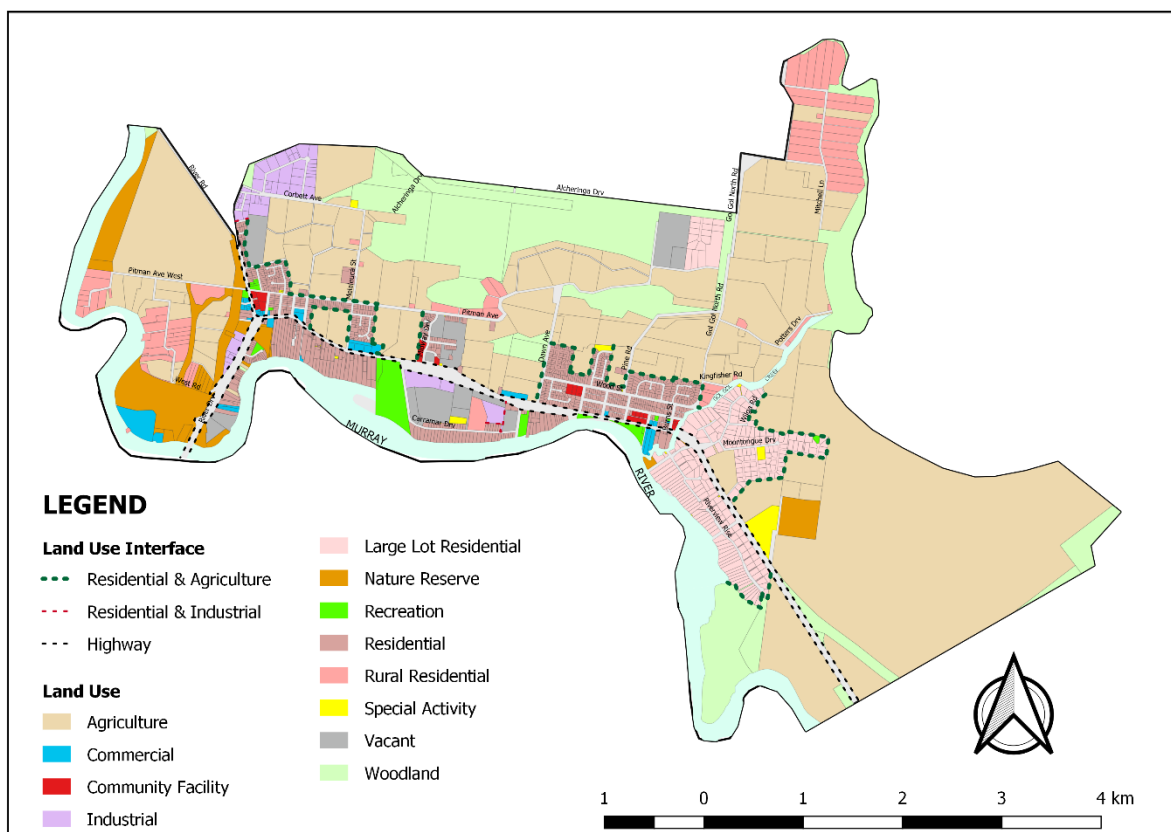


Figure 6.6: Land use interface

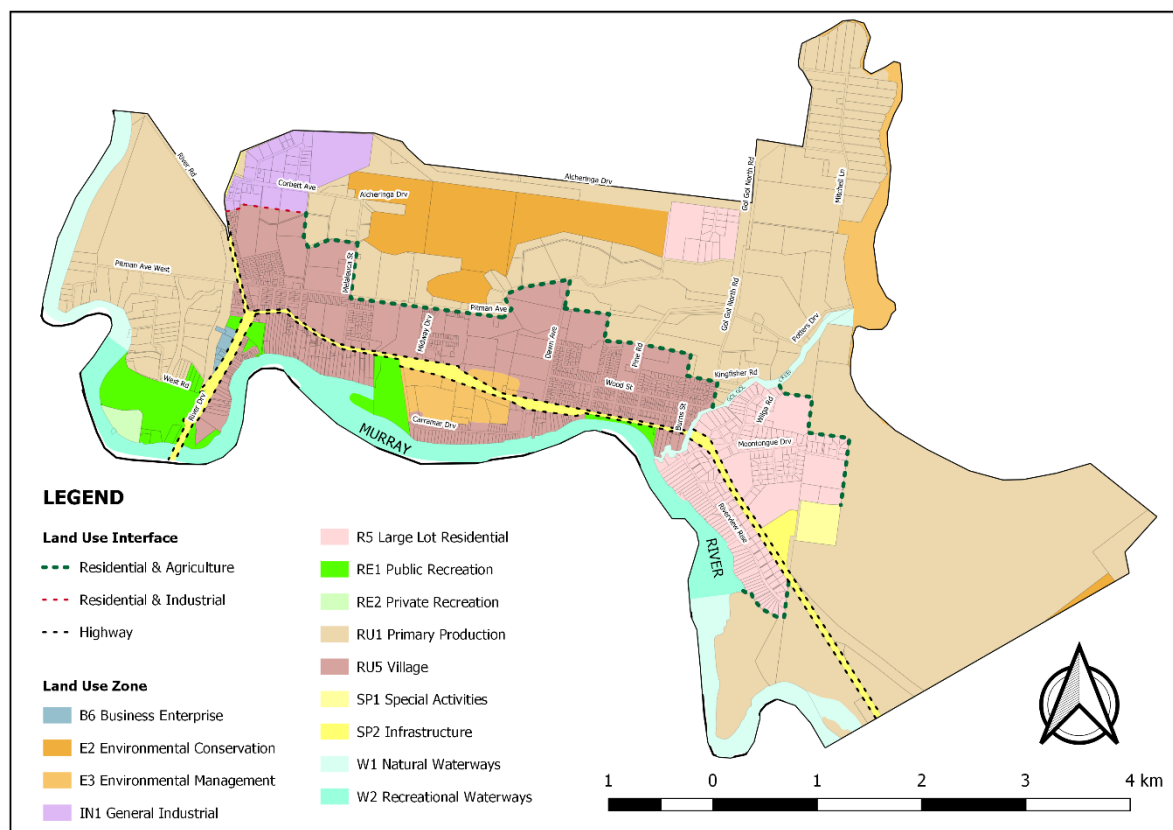


Figure 6.7: Land use zone interface

## **6.7 The way forward**

The land use mix within the Buronga Gol Gol study area will experience significant changes in the near future. The land uses are expected to be more urban, with some intensive agriculture located to the northern part of the Buronga Gol Gol study area. This transformation in the land use structure will be driven largely by the current high demand for residential land and development in Buronga Gol Gol. The structure plan must recognise this land use transition and introduce measures to ensure the resultant built environment is sustainable and relatively self-sufficient. The structure plan should as a minimum:

- i. promote urban infilling and consolidation to ensure a sustainable and healthy built environment,
- ii. develop a method for staging release and development of residential and industrial land,
- iii. introduce a residential density scheme to cater for a diverse range of housing market segments,
- iv. designate land for future commercial activities, and
- v. identify and implement buffers at the interfaces of conflicting land uses.

## Chapter 7 Local Economy

This chapter analyses the economic situation in Buronga Gol Gol and the broader region. This informs types of employment land and uses required for creating and sustaining local economic opportunities and growth.

### 7.1 Employment level and industries

In 2016, Buronga Gol Gol had a total labour force of 1,333 persons of which 95.3% was employed. This resulted in an unemployment rate of 4.7% which is below the NSW state average of 8.5%, as well as that of Mildura (6%). This indicates that Buronga Gol Gol has a relatively high labour participation rate that can be attributed to its strong appeal to the working population in the region.

By employment, Buronga Gol Gol's economy is diversified, with the major industries of employment being Health Care and Social Assistance (10.5%), Retail Trade (10.4%), Construction (9.7%), Education and Training (9.1%) and Agriculture, Forestry and Fishing (8.9%). These key industries also support a large employment base within the region and local area as shown in Table 7.1. Consistent with the main industries of employment, over 50% of the labour force in Buronga Gol Gol are engaged in non-professional and managerial occupations. A breakdown of the occupation distribution of the labour force is presented in Table 7.2.

**Table 7.1: Industries of employment**

Industry	Buronga Gol Gol (%)	Wentworth LGA (%)	NSW (%)	Australia (%)
Health Care and Social Assistance	10.5	10.1	12.5	12.6
Retail Trade	10.4	8.3	9.7	9.9
Construction	9.7	6.6	8.4	8.5
Education and Training	9.1	8.1	8.4	8.7
Agriculture, Forestry and Fishing	8.9	20.0	2.1	2.5
Accommodation and Food Services	6.6	7.4	7.1	6.9
Public Administration and Safety	5.5	5.6	6.0	6.7
Administrative and Support Services	5.4	4.0	3.5	3.4
Manufacturing	5.2	4.7	5.8	6.4
Transport, Postal and Warehousing	5.1	4.3	4.7	4.7
Inadequately described/Not stated	4.4	4.9	4.7	4.4
Other Services	4.0	3.4	3.7	3.7
Professional, Scientific and Technical Services	3.3	2.6	8.1	7.3

Wholesale Trade	3.2	2.4	3.1	2.9
Electricity, Gas, Water and Waste Services	2.1	2.0	0.9	1.1
Financial and Insurance Services	2.1	1.4	4.9	3.6
Rental, Hiring and Real Estate Services	1.7	1.1	1.8	1.7
Information Media and Telecommunications	1.3	0.8	2.2	1.7
Arts and Recreation Services	0.9	1.0	1.5	1.7
Mining	0.7	1.7	0.9	1.7
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

**Table 7.2: Occupation distribution**

Occupation	Buronga Gol Gol (%)	Wentworth LGA (%)	NSW (%)	Australia (%)
Managers	17.0	22.5	13.5	13.0
Professionals	16.8	13.2	23.6	22.2
Technicians and trade workers	16.6	12.8	12.7	13.5
Clerical and administrative workers	11.6	10.4	13.8	13.6
Labourers	11.0	13.6	8.8	9.5
Sales workers	10.5	8.3	9.2	9.4
Community and personal services workers	9.7	9.7	10.4	10.8
Machinery operators and drivers	6.7	7.6	6.1	6.3
Inadequately described/Not stated	1.4	2.0	1.8	1.7
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

## 7.2 Economic sectors/activities

The Wentworth Shire local government area is estimated to generate more than \$854 million in total economic output. The top three industries measured in terms of output include Agriculture, Forestry and Fishing, Mining and Manufacturing reflecting the economic specialisations of the Western Murray and Sunraysia regions. These three sectors account for more than half (51.7%) of the gross regional output for the Shire. In Buronga Gol Gol there were approximately 295 businesses operating in the various economic industries/sectors in 2016.

The Agriculture, Forestry and Fishing sector is dominated by irrigated horticulture, which accounts for close to 80% of gross regional output and contributes almost one-quarter (23%) and nearly one-fifth (18%) of NSW's grapes and citrus production respectively. Other forms of agricultural production in the Shire include pastoral farming, grazing and dryland cropping. The irrigated horticulture industry is by far the most productive land use and driver of the

local economy with strong connections to related sectors including manufacturing (food and beverage processing), transport and warehousing.

In Buronga Gol Gol, numerous extensive irrigated horticultural farms such as grape vineyards, citrus orchards, and vegetables and nut orchards has been established on agricultural lands located to the north, as well as between built-up areas. However, new large multi-lot irrigated horticultural farms are generally established outside of traditional irrigation areas, such as east of Gol Gol near Trentham Cliffs. This trend is in response to global and domestic markets and environmental factors. Prominent among the factors is improved irrigation technology that has made it possible to pump water further from the river systems and the ability to trade water entitlements across land of equivalent agricultural value.

The most important manufacturing industry in the Wentworth Shire is food and beverage processing and packaging, which is reliant on the irrigated agricultural base. Within the Buronga Gol Gol study area, a number of light industrial activities such as field service centres, metal fabrication, and warehousing and logistics are located in the Buronga Industrial Precinct and at vantage points along the Sturt Highway within the townships. Some prominent industrial businesses within the Buronga Gol Gol study area include Morello Earthmoving, O'Connor Harvesting, Pickering Transport Group, Decentralised Demountable Pty, Markar Group, Mangan Group, APK Engineering, Mawsons Concrete and Sand, Greg and Sons Steel and Cummins Plumbing and Piping among others.

A major constraint to the establishment of industrial businesses in Buronga Gol Gol, especially in the industrial precinct, has been the large size of industrial allotments which are unsuitable for localised industrial developments. However, recent re-subdivision of some existing lots has marginally improved land take up in the industrial precinct, which is currently estimated as 4 lots per year. Thus, there is the need to ensure that future industrial subdivisions create allotments that are suitable for the kind of industrial activities common in Buronga Gol Gol.

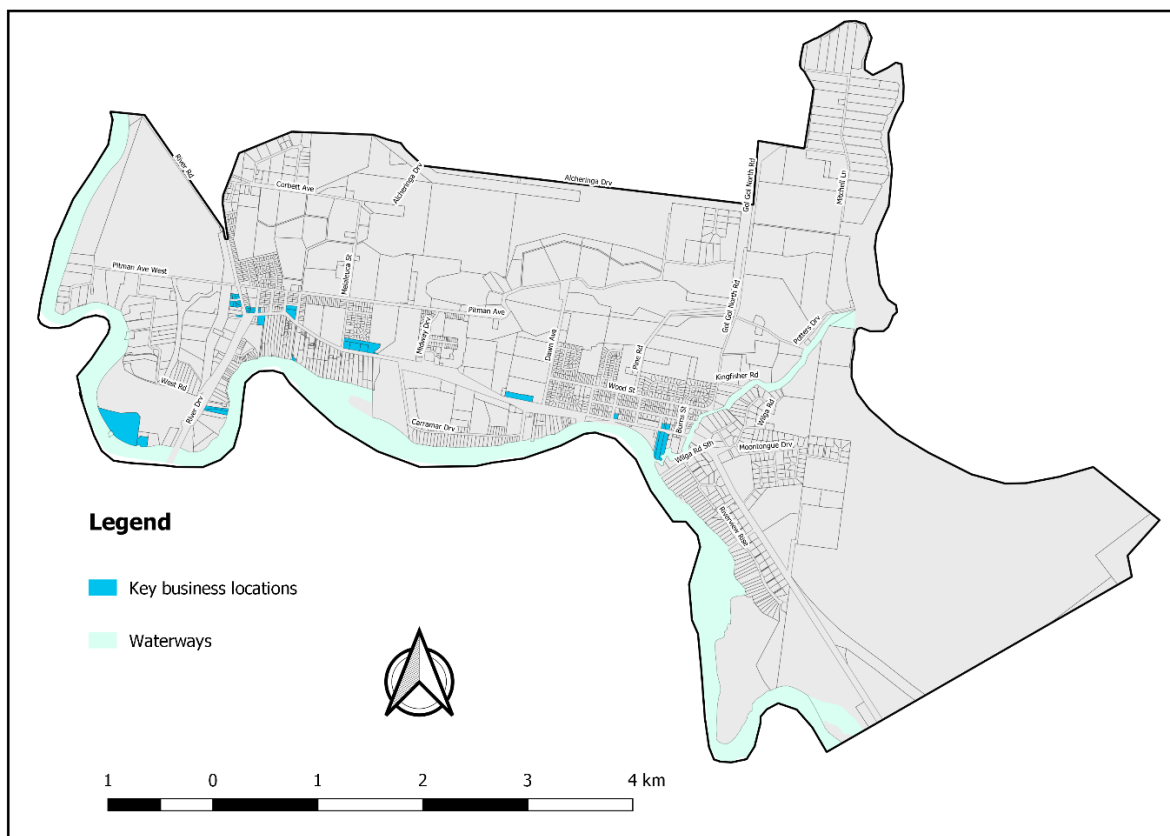
The Wentworth Shire is endowed with nationally and internationally significant tourist attractions including Willandra Lakes World heritage area, Mungo National Park, Australian Inland Botanic Garden, Murray-Darling Rivers Junction Island, river-based recreation and tourism, iconic outback land features (e.g. Perry Sand Hills) and local historic cultural heritage

items. It is estimated that up to 300,000 people visit the Mildura/Wentworth region each year. The spatial implications for the Wentworth Shire have seen tourist service providers such as caravan parks, restaurants and cellar doors, camping grounds, and hotels locate on or near river-front land to capitalise on the unique offering of the Murray and Darling rivers.

Key tourism-related services and facilities located within the Buronga Gol Gol study area and its immediate surrounds include Varapodio Estate Olive Grove, Orange World, Buronga Hill Winery and Stanley Wines, Riverside Gardens, Buronga Caravan Park and Gol Gol Hotel among others. These are complemented by the role Mildura plays around existing and emerging tourism sectors in the region. The Structure Plan needs to promote the use of land for tourism and related services, together with providing and maintaining necessary infrastructure and amenity to attract tourism.

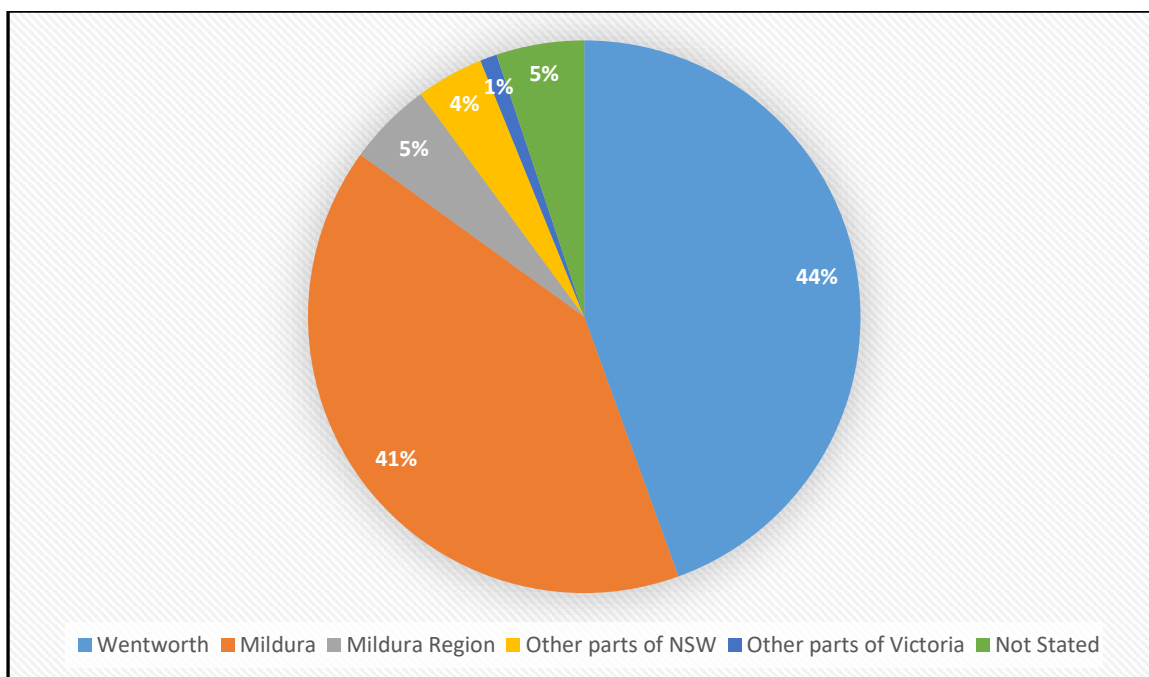
Buronga Gol Gol has very limited retail and commercial services and lacks a well-defined commercial centre (refer Figure 7.1). The retail and commercial businesses in the area include a new supermarket and speciality shops, post offices, takeaway premises, bakeries, a community support service, automotive services and hotels. Most of these businesses are confined to the self-evolved town centres along the Sturt Highway. However, expansion of these local town centres to accommodate more retail uses has been precluded by lack of vacant land and environmental constraints such as flood risk, resulting in a near absence of 'local retail experience' in Buronga Gol Gol. Consequently, residents of Buronga Gol Gol access almost all retail and commercial services in Mildura, which is recognised as the service centre for the whole region.

Mildura has a number of retail centres and bulky goods retail precincts that house a range of Discount Department Stores (e.g. Kmart, Big W, Target), bulky goods retailers (e.g. Harvey Norman, The Good Guys), full line supermarkets (e.g. Woolworths, Coles), local small supermarket (IGA) and specialty stores, which service the local and regional population. What this implies for Buronga Gol Gol is that almost all the residents have to travel by car to access basic retail and commercial services. This makes it imperative for the Structure Plan to prioritise the allocation and development of a more accessible and modern retail and commercial area in Buronga Gol Gol. The development of a local commercial core will also provide retail employment opportunities and increase employment diversity.



### 7.3 Place of work and travel to work

Proximity to the regional city of Mildura means that the Mildura and Wentworth job and labour markets are increasingly linked. According to the latest journey to work data from the 2016 ABS Census, 41% of the working age population (1,105 people) travel from Wentworth to Mildura for work while 5% of the working age population (1,161 people) travel from Mildura to Wentworth for work. Nonetheless, 44% of the Wentworth Shire labour force work within the shire as presented in Figure 7.2. The proportion of labour force who remain within the shire to work is likely to increase as emerging sectors of the local economy such as renewable energy, multi-lot irrigation, horticulture, mineral sand mining and professional and commercial services develop and provide new opportunities for employment, and more working aged population or young families are attracted to Buronga Gol Gol.



**Figure 7.2: Place of work**

Table 7.3 summarises the method of travel to work in Buronga Gol Gol. The Table shows that 82.6% of workers use one method of travel to work, with 73.7% travelling to work by car as a driver and 4.4% by car as a passenger. A little over 1% of workers travel to work by either a truck (0.9%) or motorbike/scooter (0.2%). Only 2.6% workers walk to work while none travel to work by bicycle, bus or taxi. The large proportion of workers who use private motorised transport (79.2%) can be attributed to the very limited public transport services and the inadequate pedestrian footpaths/sharedways in the area. Given that most work locally in the region, the structure plan should introduce measures that will encourage residents to choose active transport options such as walking and cycling to promote a healthy and active community in Buronga Gol Gol.

**Table 7.3: Method of travel to work**

Method of travel	Buronga Gol Gol (%)	Wentworth (%)	NSW (%)	Australia (%)
Car, as driver	73.7	65.2	57.8	61.5
Car, as passenger	4.4	4.5	4.3	4.6
Walked	2.6	5.1	3.9	3.5
Truck	0.9	0.8	1.0	0.8
Motorbike/scooter	0.2	0.3	0.6	0.6
Other two methods	0.5	0.6	0.6	0.6
Worked at home	4.6	9.8	4.8	4.7
Did not go to work	10.7	8.8	8.7	9.4
Method of travel to work not stated	1.8	2.3	1.0	1.0

## 7.4 Household Income and Expenditure

The median household weekly income in Buronga Gol Gol is \$1,338, only marginally below the NSW and Australian median income of \$1,486 and \$1,438 respectively. In addition, the proportion of Buronga Gol Gol households (19.7%) with less than \$650 gross weekly income is on par with the State and National averages although, while households with more than \$3000 gross weekly income (12.6%) is below that of the state (18.7%) and the nation (16.4%). This household income pattern suggests that most households in Buronga Gol Gol are within the moderate-income bracket.

The Australian average weekly household expenditure of \$1,425 from the 2015-2016 ABS Household Expenditure Survey has been adapted for Buronga Gol Gol given the absence of locality level data. This has been done by adjusting the Australian average, the 10% difference, between the median weekly household income of Australia and Buronga Gol Gol. Based on this, the average weekly household expenditure has been determined as \$1,283 as shown in Table 7.4. The convenient proximity of the neighbouring regional city of Mildura offers the vast majority of retail, commercial and professional services to residents of Buronga Gol Gol, resulting in most of the weekly expenditure leaving the local area. However, the establishment of new services including health, supermarket and retail options is expected to see more of the weekly expenditure spent within the Buronga Gol Gol community.

**Table 7.4: Weekly household goods and services expenditure**

Expenditure Item	Expenditure (\$)
Current housing costs (selected dwelling)	251
Domestic fuel and power	37
Food and non-alcoholic beverages	213
Alcoholic beverages	29
Tobacco products	12
Clothing and footwear	39
Household furnishings and equipment	52
Household services and operation	40
Medical care and health expenses	74
Transport	186
Communication	42
Recreation	155
Education	39

Personal care	26
Miscellaneous goods and services	87
<b>Total</b>	<b>1283</b>

## 7.5 The way forward

Buronga Gol Gol has a diversified local economy that is intrinsically linked with that of the broader Sunraysia region. Horticulture, the main specialisation of the local and regional economy is undergoing significant transformation with new large multi-lot irrigated horticultural enterprises now established outside traditional irrigation areas. This is creating growth opportunities in related industry sectors such as value-added manufacturing (food and beverage processing and packaging), transport (warehousing, freight and logistics) and construction in Buronga Gol Gol. However, retail and commercial services are very limited in the township area with residents accessing these services in Mildura.

Based on the key local economic issues discussed, it is necessary that the Structure Plan:

- i. improves the employment self-containment rate to increase local employment opportunities and reduce residents' journey to work,
- ii. protects employment land from incompatible development especially residential land uses,
- iii. allocates land for commercial core to facilitate and encourage growth of local retail services and increase employment diversity,
- iv. determines and services additional land required to support growth of manufacturing and transport sectors, and
- v. promotes active methods of travel to work.

## **Chapter 8 Infrastructure**

This chapter examines the capacity and conditions of existing infrastructure in the Buronga Gol Gol study area. It identifies issues and gaps in the infrastructure to aid in determining appropriate infrastructure servicing levels and plans for supporting future growth in the area.

### **8.1 Roads and transport**

The Buronga to Monak Interface Study 2016 prepared by Tonkin Consulting in 2016 is the main transport and traffic study being used to inform the structure planning process for Buronga Gol Gol. The study was undertaken to identify a range of improvements required to address existing issues in the interface between the Sturt Highway and property boundary in the Buronga to Monak highway corridor and cater for future development within the corridor. In addition, further transport and traffic assessment has been undertaken to capture and examine recent changes in the traffic and transport conditions in the Buronga Gol Gol study area. The outcomes of the study and further assessment are presented in this section.

#### **8.1.1 Road network**

Figures 8.1 and 8.2 present the road network and traffic conditions in Buronga Gol Gol. Buronga and Gol Gol effectively straddle both sides of the Sturt Highway (State Highway [SH] 14), which is part of the National Highway system. It extends to the east of the study area to intersect with the Mid-Western Highway at Hay and the Hume Highway at Wagga Wagga, where access is provided to Sydney and Brisbane. On the western side of Buronga, it intersects with another part of the National Highway system, the Silver City Highway (SH 22), which extends to the west to Wentworth and further to Broken Hill on to the Queensland border. At the Buronga Roundabout, the Sturt Highway diverts south and connects to the Chaffey Bridge to establish an important connection to Mildura, Adelaide and Melbourne. The stretch of the highways within the Buronga Gol Gol study area has a speed limit of 60 km/hr.

These National Highway routes define the arterial road system within Buronga Gol Gol and hence impose constraints on the ability to manage arterial traffic flows which include a high proportion of heavy vehicles. In particular, the highways provide significant constraints to access and movement systems within the township area due to the need to maintain arterial

flows. Local and collector roads provide access to the highways in several locations and sometimes result in uncontrolled access to the highways.

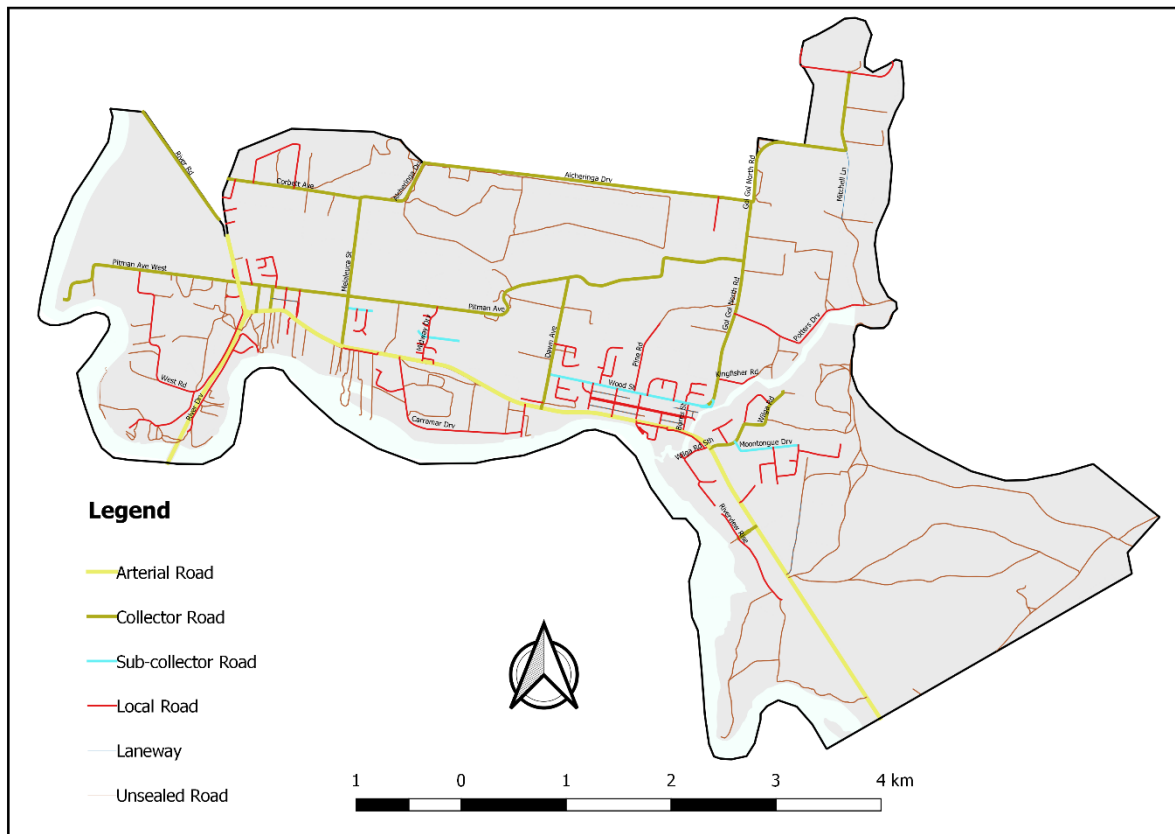
Buronga Gol Gol contains collector roads that have an important role in providing traffic distribution from the local roads to the arterial network. These include:

- i. River Road provides an east west connection between the Silver City Highway and areas to the west. It generally follows the northern side of the Murray River. River Road links with the Silver City Highway at an acute angle which falls outside of the 90° angle preference for safe intersections (refer Figure 8.2). This needs to be addressed through intersection treatments in the Structure Plan.
- ii. Corbett Avenue provides an east west connection on the northern outskirts of Buronga, connecting to Silver City Highway at a 'T' junction. It extends further to the east where it becomes Alcheringa Drive. Alcheringa Drive has a collector road status on the perimeter of the study area.
- iii. Pitman Avenue provides an east west connection generally parallel to the Sturt Highway on the northern boundary of Buronga Gol Gol. It connects to the Silver City Highway in the west. It fronts residential development as well as horticultural properties, with an existing public school located at its western end.
- iv. Melaleuca Street provides a north south connection between Sturt Highway and Corbett Avenue on the eastern side of Buronga, crossing Pitman Avenue. It fronts residential and commercial development, as well as horticultural properties.
- v. Dawn Avenue provides a north south connection between Sturt Highway and Pitman Avenue on the western side of Gol Gol. It delineates the western boundary of Gol Gol. As the main collector road for most of the traffic from recent subdivisions in Gol Gol, increasing vehicular queueing from traffic waiting to turn right towards Mildura has been observed at the intersection of this road with the Sturt Highway during morning peak hour. This emerging traffic congestion problem needs to be addressed through appropriate intersection treatments.
- vi. Wood Street runs parallel to Sturt Highway on its northern side and is an alternative local route to that road. It also connects Dawn Avenue on the western side of Gol Gol and Gol Gol North Road on the eastern side of Gol Gol.

- vii. Gol Gol North Road provides connection to the north eastern corner of Gol Gol and connects the Wood Street on the eastern side of Gol Gol near the Gol Gol Creek.
- viii. Wilga Road provides north south connection to the Sturt Highway on the eastern outskirts of Gol Gol. It fronts large lot residential development and connects midway to the north with Moontongue Drive, which serves as a sub-collector road for the large lot residential corridor. The intersection of Wilga Road with Sturt Highway will require upgrade treatment in the immediate future to accommodate the increasing traffic from the expanding large lot residential development east of Gol Gol.

In addition to the above, Buronga Gol Gol has many local roads which provide local access functions serving individual properties. These local roads are bitumen sealed and are under the care and control of Council.

There is also a significant number of unsealed dirt roads which informally wind their way in and around Buronga Gol Gol. Most of these unsealed roads pass through road reserves and into Crown land and reserves, boundary easements and onto private properties. Although most of the dirt roads service rural lands, there are residential roads within Buronga Gol Gol which are unsealed, including properties that lack formal access to the road or street frontage. Examples include Bridge Road in Buronga and the properties behind Buronga's B6 Enterprise Corridor. There is a need to prioritise to ensure that all residential areas in close proximity to the township areas are serviced with sealed roads/streets and formal accesses.



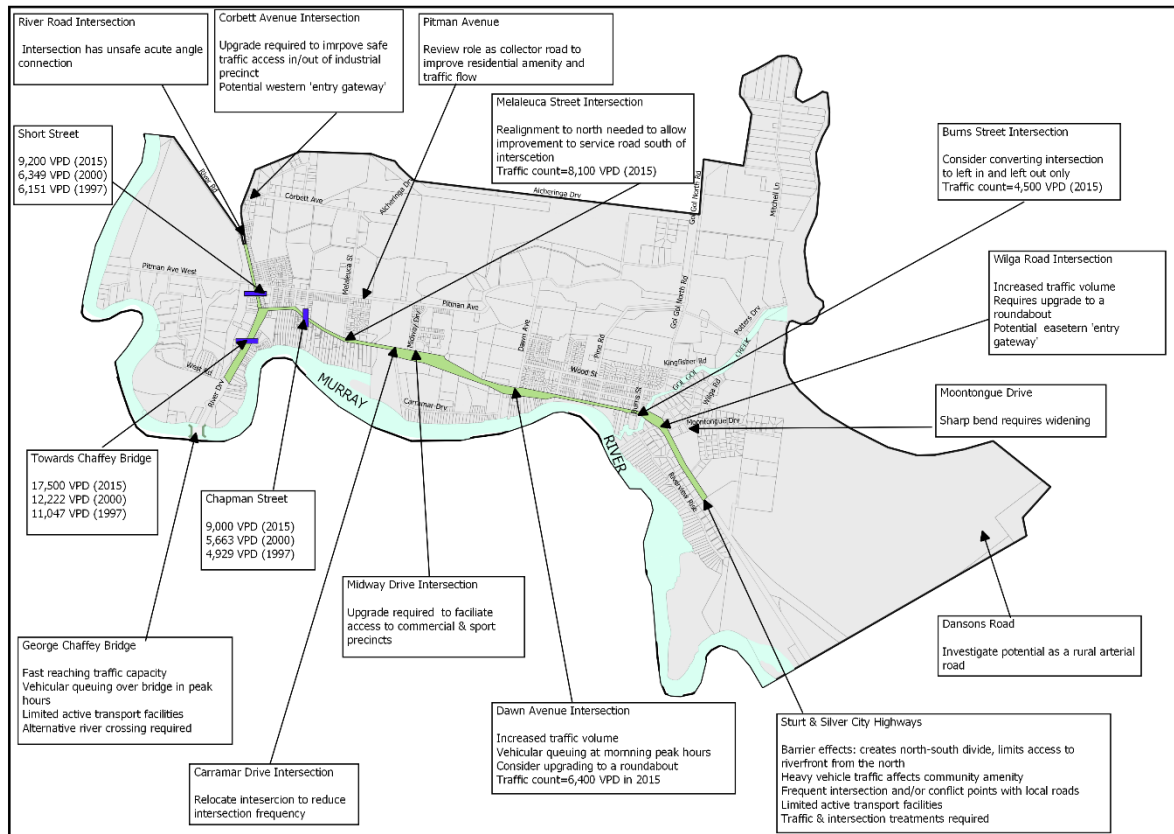
**Figure 8.1: Existing road network**

### 8.1.2 Traffic volumes

Traffic volume data for Buronga Gol Gol from the Buronga Monak Interface Study and Council records have been reviewed (refer Figure 8.2). Traffic flows at the main roundabout in Buronga connecting the Sturt Highway and Silver City Highways was estimated in 2015 as 9,200 vehicle per day (VPD) at Short Street, 17,500 VPD at the Chaffey Bridge and 9,000 VPD at Chapman Street. In addition, traffic volume on the Sturt Highway recorded at the Melaleuca Street, Dawn Avenue and Burns Street intersections was 8,100 VPD, 6,400 VPD and 4,500 VPD respectively in 2015. The annual growth of traffic volume is estimated as 2.5% per annum.

In 2015, heavy vehicle movements accounted for 9.5% (1,1663 VPD) of the total traffic volume recorded at the George Chaffey Bridge, of the total 6,622 VPD recorded at the Short Street and Silver City Highway intersection. Using the annual traffic growth rate, the heavy vehicle component of the total traffic flow in 2015 is estimated as 1,620 VPD. The proportion of heavy vehicle traffic has arguably increased based on trends in freight and heavy vehicle movements observed during site visits undertaken as part of the structure plan preparation process. These

heavy vehicles impact significantly on the amenity of these routes and this is in direct conflict with movements across the Sturt Highway by local traffic as well as pedestrians and cyclists. These large trucks heavily dictate the structural and geometric design of these arterial roads. In addition, heavy vehicles can use any non-restricted route required to reach their destination, including the collector and local road system.



**Figure 8.2: Road & traffic analysis**

### 8.1.3 Road safety

Crash report data between 2010 and 2015 indicate a total of 13 crashes were reported in the Buronga Gol Gol study area over the period including:

- six rear end and off road/hit object crashes between Chaffey Bridge and Buronga Roundabout,
- two off road/left bend and lane change left crashes at the intersection of the Sturt Highway with the Silver City Highway (Buronga roundabout),
- one off road hit off object between Buronga and Gol Gol, and
- four rear, head in, right rear and hit pedestrian in Gol Gol Township.

These crash rates are very moderate and recent road and traffic upgrades undertaken by Council have further improved road safety conditions. The upgrades include a pedestrian refuge at the intersection of the Sturt Highway and the Silver City Highway, median strip in Gol Gol, reduction of speed limit from 80 km/h to 60 km/h between Buronga and Gol Gol. Nonetheless, there are still road safety issues such as separation of pedestrian and vehicular traffic at important intersections that warrant further attention and investigation.

#### **8.1.4 Public Transport**

CDC Mildura is the only service provider of public transport in Buronga Gol Gol and services most of the Sunraysia region. The main bus service for Buronga Gol Gol runs between Mildura and Gol Gol two times per day from Monday to Friday. Another bus service operates between Mildura and Wentworth via Buronga five times per day.

As illustrated in Figure 8.3, public bus services are limited to the main township areas with no services to the large lot residential and rural residential areas in east and north Gol Gol. However, there are school children only bus services that extend further to the north and east of Gol Gol.

There are approximately 22 bus stops in Buronga Gol Gol. 15 of these contain bus shelters while the remaining 7 are bus stop signs. Bus stops within the main township area are generally located within acceptable walking distance.

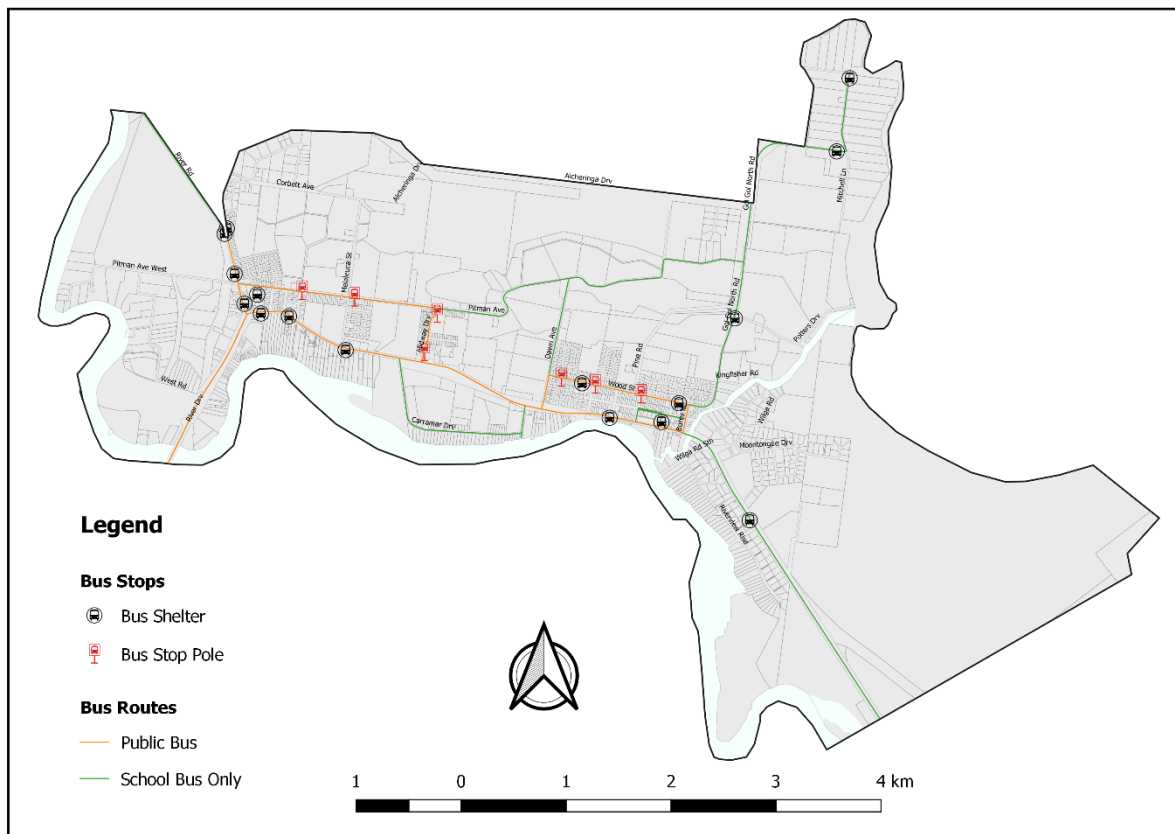
Although the existing public bus service is considered to be of good quality and reliable by the community, the extent of public transport usage is minimal with service being primarily popular among school children and the disadvantaged within the community. There is the need to increase the coverage and frequency of bus service to improve patronage of public transport to subsequently reduce car dependence.

Taxi services operate in Buronga Gol Gol. The taxi services operators include URCARB Mildura, Crown Cabs Mildura, Mildura Taxis Associated and Murray Darling Taxi Services. However, taxi services are not guaranteed or reliable as they are all based in Mildura and prioritise Victorian passengers over NSW.

At a regional level, there are both regional and interstate bus services to Adelaide, Melbourne, Broken Hill and other regional centres. Bus stations for these services are located

in Mildura. Also, the closest railway station is located in the Mildura Central Business District (CBD) but has not operated a passenger train since 1993. At this stage the station handles freight only. Whilst there is the possibility that a passenger service may recommence it would require significant infrastructure upgrades from VicTrack and VicRail.

There is passenger air service at the Mildura Airport, approximately 12-15 kilometres from Buronga Gol Gol. There is an average of 30 flights per day between Mildura and Melbourne (one hour and ten minutes flight time) and one each day to Broken Hill (fifty-five minutes) and Adelaide (1 hour and 5 minutes). Sydney flights will commence some time in 2020.

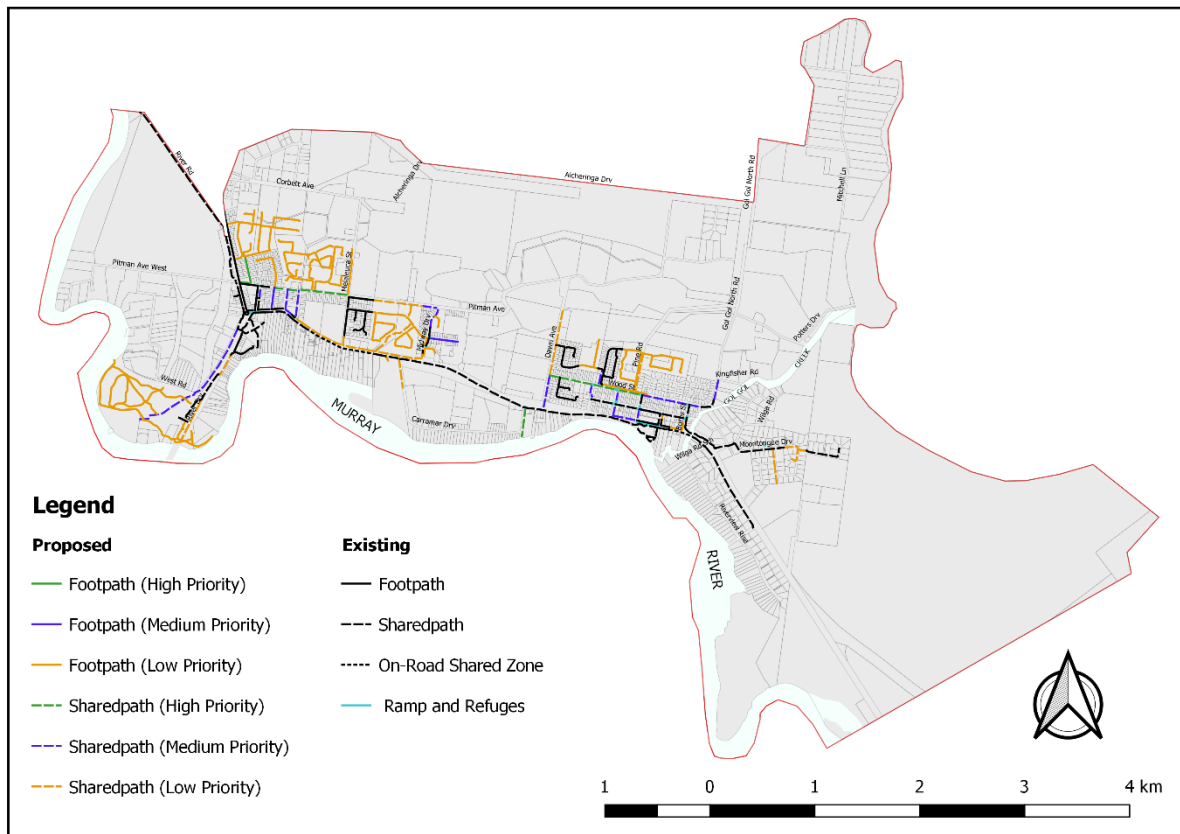


**Figure 8.3: Public transport service**

### 8.1.5 Footpaths and shared ways

Access options for the wider community that do not involve motorised transport are limited within the study area. There are limited footpaths and shared ways within the Buronga Gol Gol study area with estimated 70% of the township area devoid of this infrastructure. As shown in Figure 8.4, the existing footpaths and shared ways are confined to the town centres, new subdivision areas and road reserves along the Highways. The





**Figure 8.5: Pedestrian access and mobility plan: Proposed path priorities plan for Buronga Gol Gol**

### 8.1.6 Future traffic generation and distribution

Using approved residential subdivision development applications in Buronga Gol Gol and a proposed multi-purpose long term development east of Gol Gol, the Buronga to Monak Interface Study Investigations Report estimated future traffic generation/volume in the study area by the year 2035. According to the report, the approved residential subdivisions and proposed multi-purpose long term development, will generate a total of 46,690 trips per day, with approximately 5,700 trips during peak periods. The future daily traffic flow distributions indicate approximately 41% of the traffic generated will be directed to the internal road network in Buronga Gol Gol with the rest being directed to Wentworth (48%) and Mildura (11%) respectively. Based on the estimated daily traffic generation and distribution, the report notes that the road capacity (i.e. 25,000 VPD) of the sections of the Sturt and Silver City Highways within the study area will be exceeded by 2025-2035 at the latest, and that duplication of carriageways and signalisation and widening of intersections will be required to ensure effective and safe operation of these arterial roads.

### **8.1.7 Issues of Concern**

The assessment of roads and transport within the study area highlight a range of issues, which have both local and regional implications. The issues include:

- i. The need to recognise and retain the status of the Sturt and Silver City Highways as national freight routes and simultaneously reduce their 'barrier effect' to provide a more 'cohesive' community;
- ii. The need to formulate a functional road hierarchy that separates trucks and cars/people to the maximum extent possible and provides safe access opportunities along the Sturt and Silver City Highways at controlled intersections;
- iii. The need to manage increasing traffic volumes on the Sturt and Silver City Highways and associated congestion and delays at major intersections and difficulty accessing abutting properties;
- iv. The need to reduce the frequency of intersections/conflict points along the Sturt and Silver City Highways;
- v. The need to increase road capacity along the Sturt and Silver City Highways in the short to medium term;
- vi. The need to remove or reduce heavy vehicle movements along the Sturt and Silver City Highways in the long term by the construction of a National Highway bypass route;
- vii. The need to manage the amenity problems associated with the high traffic volumes and heavy vehicle volumes in particular on the Sturt and Silver City Highways;
- viii. The need to improve the visual amenity (streetscape) along the Sturt Highway and the Silver City Highway as well as other roads;
- ix. The need to improve pedestrian and cycle facilities, including for people with a disability, to increase active travel ratios and reduce vehicular dependency;
- x. The need to increase public transport service frequency and patronage;
- xi. The need to manage increased traffic volumes within the evolving commercial environment between Melaleuca Street and Dawn Avenue;
- xii. The need to plan for industrial areas that minimise unnecessary heavy vehicle movements within local streets; and

- xiii. The need to improve safety within the study area and to undertake road safety audits to identify existing hazardous locations.

### **8.1.8 Opportunities**

The opportunities associated with transport and traffic within the study area are as follows:

- i. TNSW is preparing a Corridor Strategy for the Sturt Highway that will define its future role/function, identify required upgrades, as well as consider realignment of the Highway to bypass Buronga Gol Gol and Mildura;
- ii. TNSW is investigating traffic treatments on the Buronga Gol Gol section of the Sturt Highway including realignment of the Melaleuca Intersection, construction of roundabouts at the Carramar Drive and Wilga Road Intersections and construction of service roads on both sides of the Highway;
- iii. Most of the future urban development in Buronga Gol Gol will occur on greenfield sites which will allow the road network to be designed and developed as necessary;
- iv. There are wide road reserves on existing major roads to cater for future widening; and
- v. TNSW is investigating a pedestrian bridge over the Murray River in Buronga Gol Gol.

## **8.2 Water Supply**

Buronga Gol Gol is serviced by a dual water supply scheme providing filtered water for use as potable water and raw water (i.e. unfiltered) for other domestic uses not requiring the same level of treatment. The reticulated water supply is available to most parts of the Buronga Gol Gol study area as shown in Figure 8.6.



- Council is currently supplying filtered water to 1,442 connections (3,556 people), which include 1,116 residential connections and 32 commercial and industrial connections. There are 1,148 connections in Buronga Gol Gol and Mourquong, 257 in Dareton and 37 connections in Namitjira.
- The total estimated filtered water usage in 2018/2019 was usage 475 megalitres with 345 megalitres (73%) and 130 megalitres (27%) used by residential and commercial/industrial users respectively. This indicates average daily filtered water usage of 1.3 megalitres. The average filtered water usage per residential connection in 2018/2019 was 248 kilolitres which indicates average daily household usage of 678 litres.
- Approximately 70% of consumers have rain water tanks.
- The tourist season produces minimal additional impact on demand.
- The existing storage reservoir located at Midway has a capacity of 3 megalitres, however its effective available capacity is approximately 340 kilolitres. This is because the operational range is only over the top 4 metres of the reservoir to ensure adequate system delivery pressures are maintained to consumers. In this context, an additional reservoir and constant monitoring and evaluation of demand data are important requisites for ensuring security of water supply in the future.
- Council has recently received a \$1.6M grant under the Safe & Secure Water Program to install electrical and telemetry control systems on the Gol Gol Water Treatment Plant to improve monitoring operations and ensure reliability of water supply.

### **8.2.2 Raw water supply**

- The Buronga Gol Gol raw water supply system comprises of three pump stations, two storage reservoirs with combined storage capacity of 1.6 megalitres (i.e. 0.6 ML for Buronga & 1 ML for Gol Gol) and reticulation pipe network (i.e. rising/trunk and reticulation mains). Chlorine is used to disinfect the water via a small chlorine dosing unit near the pump stations.
- The system currently supplies raw water to 1,421 connections (3,556 people), which include 1,366 residential connections and 55 commercial and industrial connections. There are 1,106 connections in Buronga Gol Gol and Mourquong, 278 in Dareton and 37 connections for Namitjira.

- The total estimated raw water usage in 2018/2019 was usage 881 megalitres with 814 megalitres (92%) and 67 megalitres (8%) used by residential and commercial/industrial users respectively. This indicates average daily raw water usage of 2.4 megalitres for all connections. The average raw water usage per residential connection in 2018/2019 was 596 kilolitres which indicates average daily household usage of 1,632 litres.
- The raw water supply system is also the water supply for firefighting.
- The summer/winter split indicates a large difference in water consumption between the periods. Higher consumption in summer from garden watering, some private swimming pools and the Shire's swimming pool in Dareton.
- The reticulation system is poor due to aging pumps and pipework that require replacement and/or upgrade. This situation currently causes restricted or low flow rates in the large lot residential area in east Gol Gol.

### **8.2.3 Water pricing and management**

Council utilises the user pays charging system for water supply with two water usage tiers for both filtered and raw water. The water consumption charges for the water usage tiers are set annually under Council's Operational Plan. The current tariff rates for filtered water are \$1.25 per kilolitre for water consumption of 0-250 kilolitres and \$2.80 per kilolitres for any water consumption over 250 kilolitres. The current tariff rates for raw water are \$0.45 per kilolitre for water consumption of 0-700 kilolitres and \$2.80 per kilolitre for water consumption over 700 kilolitres. These water consumption charges are in addition to annual access charges which is dependent on the connection size.

In Buronga Gol Gol, Council levy a fee for water and sewer connections to recover the capital cost of providing headworks and other major infrastructure components under Council's Development Servicing Plan No.1 –Water Supply and Sewerage Services. The current developer charge for water is \$2,955 (i.e. filtered water: \$1,418 & raw water: \$1,537) and is payable prior to the issue of a Subdivision Certificate.

Water tapping fees are charged in other parts of the Shire where the Development Servicing Plan No.1 –Water Supply and Sewerage Services is not applicable. The tapping fee is set under the Operational Plan and is dependent on the connection size.

Council recognises the importance of 'Wise Water Use' and conservation practices and has an ongoing water conservation programme. However, meter readings have found that the consumption of water is often high, especially among residential users. For example, the combined average daily household water usage in 2018/2019 was 2,310 litres (i.e. 678 litres of filtered water and 1,632 litres of raw water) which is about 2.5 times the Australian average daily water consumption 900 litres per household (Riverina Water County Council, 2019). This needs to be addressed through the development of a water conservation and demand management strategy aimed at encouraging water conservation practices. A further enhancement would be the development of an Integrated Water Cycle Management Plan that looks at water management on a holistic basis i.e. the combination of domestic water, sewer and stormwater.

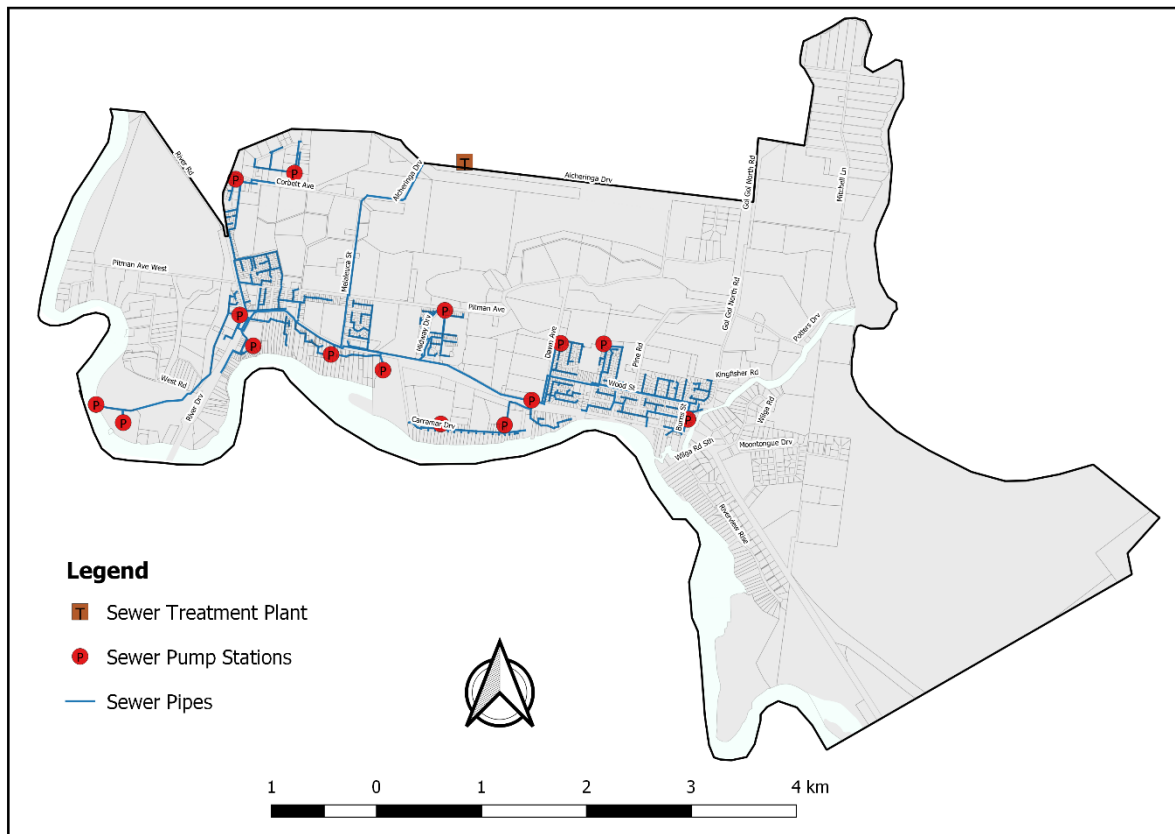
#### **8.2.4 Water supply capacity for future development**

The current total annual water usage of 1356 megalitres (i.e. 475 megalitres of filtered water and 814 megalitres of raw water) represents 48% of the annual water allocation of 2,838 megalitres under Council's current water licence. This indicates that Council currently has excess water allocation of 1,482 megalitres per annum. The water filtration plant currently services 1,442 connections which is only 49% of its design capacity of 3,000 connections indicating a high excess capacity of 1,449 connections in the existing headworks. In addition, the current daily filtered water usage of 1.3 megalitres is 65% below the water treatment plant's production capacity of 3.7 megalitres per day. These high excess water allocation and plant production capacity suggest that the existing water supply system has the ability to support future development into the long-term.

However, there is clear evidence of excessive use by many consumers indicating that further capacity can be extracted from the headworks through implementation of a demand management program aimed at encouraging water conservation practices. In addition, pumping and pipework infrastructure for raw water will require major replacement and upgrade works in the near future. Capacity issues will need to be addressed in design to ensure these elements are designed to cater for future urban expansion. The replacement of these assets will need to be incorporated into asset management plan and capital works budget.

### 8.3 Sewerage

Reticulated and on-site sewerage management systems are used in Buronga Gol Gol (refer Figure 8.7). Current operational parameters applicable to the sewerage management systems are outlined below.



**Figure 8.7: Existing sewerage infrastructure**

#### 8.3.1 Reticulated sewerage management system

- The Gol Gol sewage treatment plant treats wastewater generated in Buronga Gol Gol. The plant was constructed in 1991.
- The plant uses oxidising ponds and has a design capacity of 10,000 Equivalent Persons [EP] (based on a design population growth of 8% per annum). The plant is classified as a small plant under the NSW Environmental Protection Authority licensing system.
- The sewage reticulation system comprises 15 pumping stations and sewer pipes (i.e. gravity and rising mains).
- Treated effluent overflow is used for revegetation of areas within the 50ha parcel of the treatment plant.

- The sewage reticulation system currently has 927 connections which includes residential, commercial, industrial and public land uses. The total connections is equivalent to 2,410 EP.
- Council charges access fees for sewerage services and this is set annually under the Operational Plan. The current annual sewer access charge is \$785 for a house and \$570 for a serviced vacant lot.
- In Buronga Gol Gol, Council levy a fee for water and sewer connections to recover the capital cost of providing headworks and other major infrastructure components under Council's Development Servicing Plan No.1 –Water Supply and Sewerage Services. The current developer charge for sewer is \$7417 and is payable prior to the issue of a Subdivision Certificate.

### **8.3.2 On-site waste management systems**

- On-site waste management systems are used in the large lot residential zone and the rural residential areas within the Buronga Gol Gol study area. The commonly used on-site waste disposal systems are septic tank and aerated systems.
- An estimated 161 septic and aerated systems have been constructed in Buronga Gol Gol between 1990 and 2019 with about 80% of these systems located in the large lot residential area east of the Gol Gol Creek.
- A lot size of at least 3000 m<sup>2</sup> is required for on-site waste disposal.
- Many on-site waste management systems are located in riparian areas which have implications in regard to floods and pollution.
- Council generally require on-site waste management systems to be an aerated system in the large lot residential zone and in areas within close proximity to watercourses.

### **8.3.3 Riverboat waste pump-out stations**

Council has provided pump-out stations along the Murray River to cater for houseboats. Sewage is removed by Council and disposed of at the Gol Gol sewage treatment plant. Council does not charge for the use of the pump-out stations and meets the maintenance costs from its general fund.

### **8.3.4 Sewerage Capacity for Future Development**

The sewage treatment plant at Gol Gol has been designed to service a population of 10,000 EP but currently services around 2,410 EP, which indicates existing excess headworks capacity of 7,590 EP. Similarly, the existing sewage pump station network appears to have ample spare capacity to meet future loads. Indeed, the existing system needs additional load to overcome septicity problems within the pump stations and rising mains.

It is suggested that Council prioritises extension of services to the large lot residential area given the potential adverse environmental impact of some of the on-site sewerage management systems in the area, especially those located on lots adjoining the Murray River. A further enhancement to sewerage management would be the development of an Integrated Water Cycle Management Plan that looks at water management on a holistic basis i.e. the combination of domestic water, sewer and stormwater. This should include investigation into re-use of grey water.

## **8.4 Stormwater**

### **8.4.1 Stormwater infrastructure and management**

Stormwater services are available to all developed urban areas of Buronga Gol Gol except the large lot residential area in south-east Gol Gol (refer Figure 8.8). The stormwater infrastructure in Buronga Gol Gol is a combination of enclosed pipes, culverts and open channels. The stormwater is discharged into natural and man-made retention basins, as well as directly into the Murray River and the Gol Gol Creek.

Council requires all stormwater runoff and roof water to be collected and conveyed by underground pipes and discharged into Council's drainage system.

The drainage system has generally worked well to prevent large scale flood incidences in Buronga Gol Gol, although recent rainfall events have revealed lapses in the ability of onsite retention basins to cope with stormwater runoff in a minor to medium rainfall event. Minor inundation affected developments in the Moontongue Drive area in 2017 due to overflow of the onsite retention basin in a medium rainfall event. There is a high chance for the phenomenon to occur in other parts of Buronga Gol Gol given the prevalence of retention basins within the built-up areas, especially in new subdivision areas.



#### **8.4.2 Onsite stormwater management systems**

Council permits on-site stormwater management systems in areas not serviced by Council's drainage system. Roof water and stormwater runoff are discharged into rubble pits in these areas. The onsite stormwater management systems are common in the large lot residential zone in south-east Gol Gol and the rural residential areas in west Buronga and north Gol Gol.

#### **8.4.3 Stormwater capacity for future development**

The existing stormwater runoff conveyance infrastructure (i.e. pipes and culverts) has adequate capacity and this can be duplicated in future development areas by requiring developers to extend the drainage network. However, there is need for well-developed and managed large capacity retention basins to cater adequately for both existing and future developments. In this regard, the effectiveness of the small retentions basins within the area should be assessed and considered for conversion to detention as necessary.

Council currently has plans of developing an existing unmanaged wetland, namely, Pink Lake on Pitman Avenue and Dawn Avenue Depression on Dawn Avenue as retention basins. It is noted that Council has already secured the approval to develop and use the Pink Lake wetland from Western Murray Irrigation Limited, who previously used it as detention basin for irrigation runoff. It is however, suggested that the planning of the development of these detention basins should include an in-depth cost benefit analysis, as well as a comprehensive assessment of alternative stormwater management approaches such as sand filters and reuse given the climatic conditions in the area.

It is suggested that Council prioritises extension of stormwater infrastructure to the large lot residential area south-east of Gol Gol to prevent the potential adverse environmental impact of the onsite stormwater management systems, given that most of the lots in the area directly adjoin the Murray River. A further enhancement to stormwater management would be the development of an Integrated Water Cycle Management Plan that looks at water management on a holistic basis i.e. the combination of domestic water, sewer and stormwater. In addition, consideration should also be given to development of a policy that requires home owners to collect and retain stormwater for on-site reuse or to collect and control runoff to pre-development overland flow before being released to Council's drainage system.

## 8.5 Power and telecommunication

Figure 8.9 shows the location of existing and proposed power and telecommunication infrastructure.

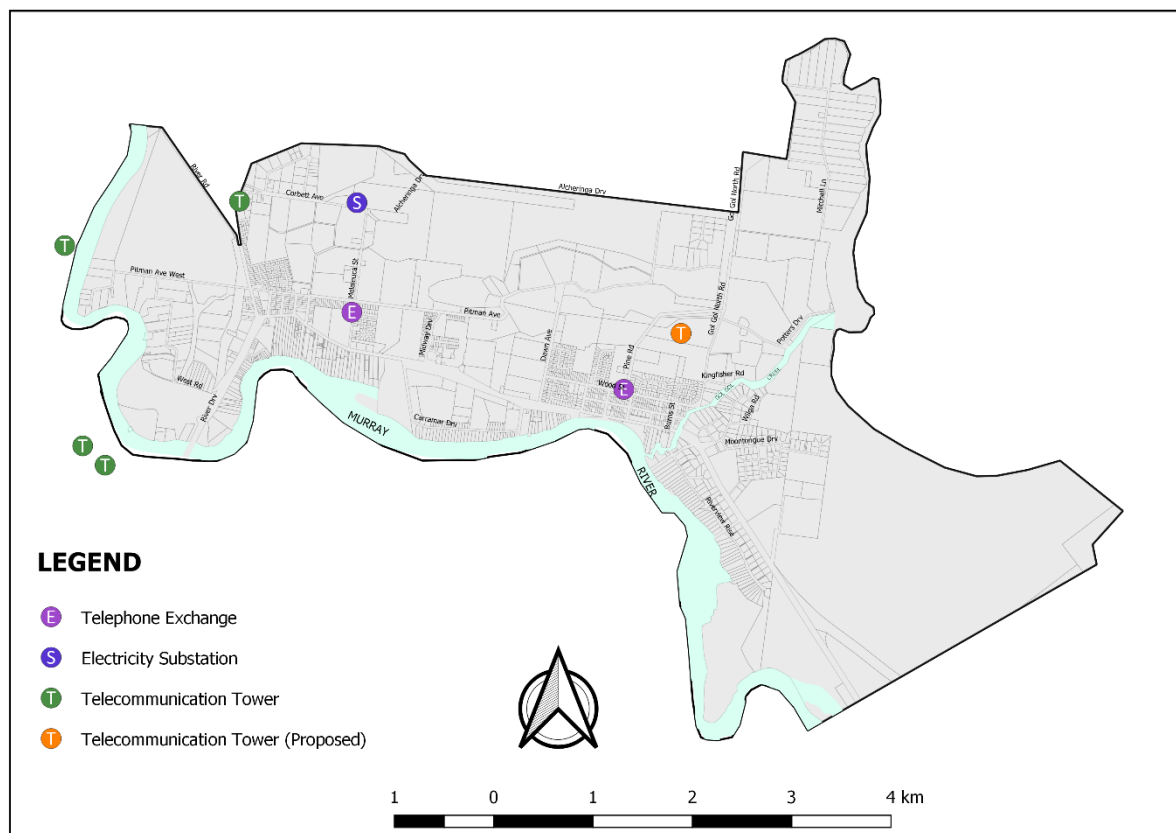
Existing power infrastructure in Buronga Gol Gol include a Substation on Corbett Avenue and a Switching Station on Arumpo Road in Buronga. In addition, a planning proposal for the development of solar farm “Buronga Energy Station” on Arumpo Road, Buronga is under consideration by the Department of Planning, Industry and Environment. The solar project aims to place downward pressure on local energy prices through increasing energy supply in the NSW National Energy Market (NEM) region, as well as provide opportunity for energy supply agreements with local large energy users.

Moreover, a \$1.5 billion electricity interconnector ‘Project EnergyConnect’ between South Australia and New South Wales recently the Australian Energy Regulator (AER) traverses the Buronga Gol Gol study area. The junction of the electricity interconnector is located immediately outside the Buronga Gol Gol area and it is expected to improve energy security, lower power prices and increase economic activities in the wider region.

Key telecommunication infrastructure in Buronga Gol Gol include two Telstra Exchanges located at Wood Street, Gol Gol and Melaleuca Street, Buronga, and an Optus Telecommunication Tower on the Sturt Highway in Buronga. In addition, approval has been granted for construction of an Optus Telecommunication Tower on Gol Gol North Road, which is anticipated to further improve the quality of mobile services in the Buronga Gol Gol area. The telecommunication network consists of a legacy copper network, however with the recent addition of fibre to the kerb and premises NBN, high quality voice and data broadband can be achieved. However, it is noted that the actual quality of telecommunication services provided to the end user depends on the service provider and the plans selected by the individual user.

Thus, the existing and proposed power and telecommunication infrastructure would have adequate capacity for existing and future development in Buronga Gol Gol. The extension of electricity and telecommunication network to future development areas would be funded by the developers. However, the predominance of overhead powerlines along the highways in

the main township areas undermine the aesthetic appeal of important precincts such as the James King Park.



**Figure 8.9: Power and telecommunication infrastructure**

## 8.6 The way forward

The current traffic and transport networks in Buronga Gol Gol present a range of issues which have both local and regional implications. It is acknowledged that the issues are in some cases conflicting and that an integrated and balanced approach to land use and transport network planning will be required to achieve optimal outcome for the local community, as well as the wider region. Paramount amongst the issues is the need to undertake planned improvements along the Sturt and Silver City Highways to ensure the safety of local traffic while maintaining flow of freight and thoroughfares on the highways. This requires a road system that ‘separates’ local and passing traffic as much as possible, as well as introducing traffic controls at intersections of the highways and local roads. Further enhancement to the transport system should focus on improving pedestrian and cycle access, as well as increasing public transport accessibility and usage.

The key issues for planning for water, sewerage and stormwater infrastructure in Buronga Gol Gol relate to both management of the systems and infrastructure development. There appears to be sufficient capacity within the study area not to restrict future development however key principles and initiatives need to be developed that will facilitate better management and infrastructure development including demand and asset management, capital investment management, community education and staging of infrastructure release.

## Chapter 9 Community and Recreational Facilities

This chapter outlines the existing community and recreational facilities in the Buronga Gol study area. This will help shape the types and levels of facilities needed to improve the liveability of the area in the future. The key community facilities and services in Buronga Gol are shown in Figure 9.1.

### 9.1 Health and emergency services

Medical services in Buronga Gol include a clinic (general practitioner service), a pathology and a pharmacy, which are all located in one building at the corner of the Silver City Highway and Short Street in Buronga.

The NSW Department of Health operates a major community health service centre in Dareton and a smaller facility at the Midway Centre (Buronga).

The community health services provided by the centre in Buronga Gol include:

- a primary health care nurse
- a Child and Family clinic once a week and home visits

It is also noted that the NSW Government is currently in the process of developing a “superclinic” (Health for everyone) in Buronga. Initial plans suggest the clinic will provide access to comprehensive general practitioner care in conjunction with Allied Health and other primary health services from one convenient location.

Medical services are also available at Dareton, Wentworth and Mildura. The Coomealla Health Aboriginal Corporation in Dareton provides general practitioner, dietitian, diabetic education and Aboriginal health services to residents of Buronga Gol. The Wentworth District Hospital in Wentworth provides limited first line emergency services, acute care (low level), long-term care, palliative care, respite care and a range of primary and community health services.

Mildura has a range of general and specialist medical services available through the 146 bed Mildura Base Hospital and a private hospital. There are also numerous general practitioners and allied health professionals in Mildura. People generally go to Adelaide and Melbourne for specialist services.

Emergency services in Buronga Gol Gol include the Buronga Police Station and Gol Gol Fire Brigade of the NSW Rural Fire Service. The police station is only manned during the day while the fire station is unmanned. The Dareton Police Station operates 24 hours and responds to emergency calls from Buronga Gol Gol during the night.

The Ambulance Victoria branch based in Mildura provides ambulance services to residents of Buronga Gol Gol as there is no NSW Ambulance Service in the area. Given Buronga Gol Gol's residents is made up of relatively high aged population and young families, it is necessary that a local ambulance station is established in the near future.

Buronga Gol Gol generally has adequate community sanitation and health related amenities such as public toilets all of which have received upgrades during the 2019-20 operational year.

## **9.2 Aged care and respite care facilities**

There is no residential care facility in Buronga Gol Gol, however there is an existing proposal for the development for a 21-unit Senior Living Complex on Summer Drive in Buronga. It is noted that only 2 units out of the 21 units have been completed to-date and the possibility of the proposal being fully implemented is unknown.

Murray House, a residential aged care facility in Wentworth provides 65 places, comprising 63 permanent residents and 2 respite specific places. There are RSL accommodation flats in Dareton. Mildura also has many residential aged care facilities and retirement villages that private accommodation services for aged and disabled persons in the region.

It is noted that there is strong community demand for a formal aged care accommodation (seniors housing) in Buronga Gol Gol given its ageing demographics and relatively high aged population. The provision of a local aged care facility in Buronga Gol Gol would enable aged residents remain in the community where they can easily receive relevant support from their families and social networks.

## **9.3 Educational facilities**

There are two childcare centres in Buronga, namely Jack & Jill Midway Child Childcare Centre and Two Rivers Early Learning. The Gol Gol Pre-school is located in Gol Gol. The childcare centres have a combined enrolment capacity of 136 children while the pre-school provides

66 places. All the centres currently have excess enrolment capacity which indicate that the centres can support the early childhood education needs of families in Buronga Gol Gol into the near future. In addition, many families in Buronga Gol Gol access early learning services in Mildura.

The area supports two primary schools, Buronga Public School and Gol Gol Public School with current enrolments of 82 and 200 students respectively, which are both below the enrolment capacity of both schools. Both institutions are high performing with ICSEA values of 862/1000 for Buronga Public School and 1023/1000 Gol Gol Public School (MySchool, 2017). However, the location of both schools on the highways creates safety issues, especially during drop-off and pick-up hours in addition to constraints to future expansion.

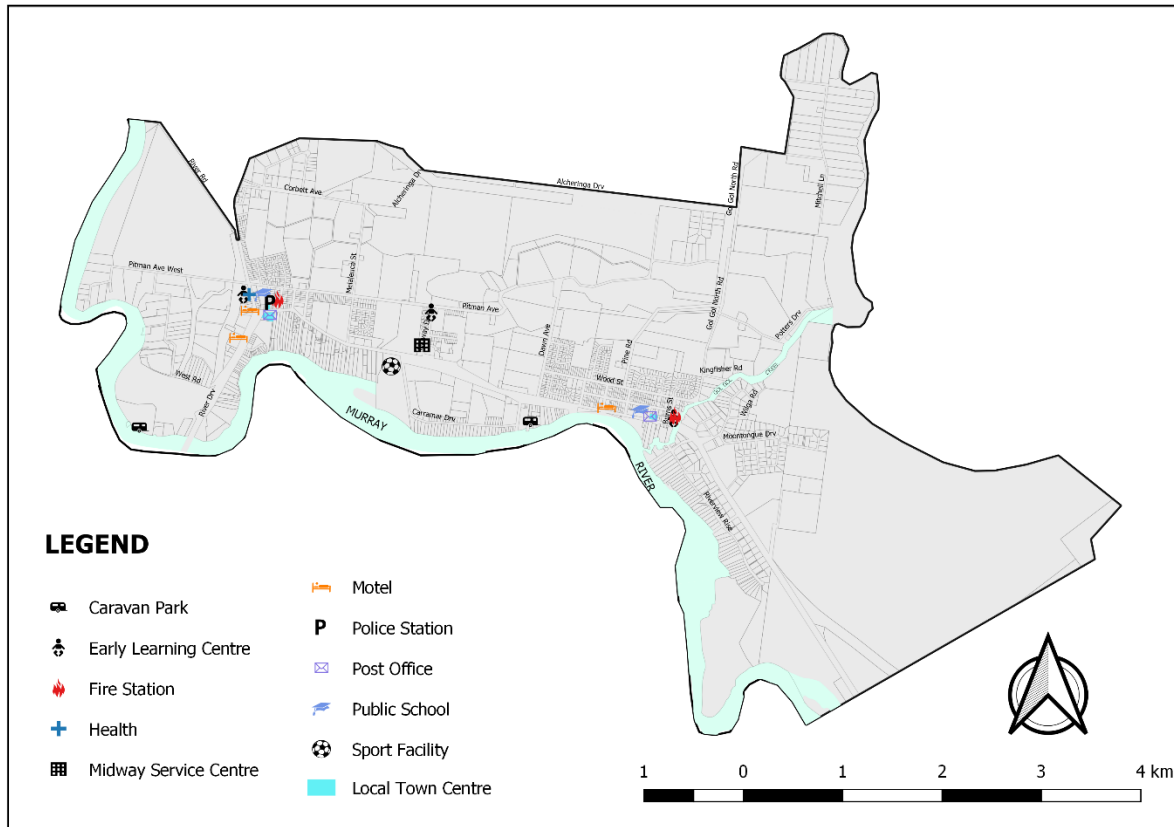
There is no secondary school in Buronga Gol Gol with secondary school-age children either attending Coomealla High School in Dareton or accessing secondary school services in Mildura. Given Buronga Gol Gol's changing demographics, such as the increase in the number of families with children, the need for a local secondary school will become increasingly paramount in the near future. It is therefore necessary for the structure plan to identify a suitable site for a future secondary school and possible consolidation of the existing primary schools to address the safety and expansion constraints posed by their current locations.

#### **9.4 Community places/centres**

There are small village-styled commercial centres located in both Buronga and Gol Gol. These centres feature basic facilities and services such as post offices, bakeries, general stores, service stations and bus stops among others. Although the commercial centres are situated in highly visible locations off the main Buronga Gol Gol thoroughfare, both do not have space for future expansion while accessibility is undermined by a lack of pedestrian crossings and safety infrastructure.

Council has also recently redeveloped a multi-purpose Midway Service Centre in Buronga. Services and facilities at the centre include a library, basketball court, community meeting rooms, senior citizens centre and Council's customer service area. Adjoining the service centre to the east is a NSW Government Office including Local Lands Services and Department of Primary Industries - Lands and Department of Industries - Water.

Another community building in Buronga Gol Gol is the recently renovated Wilkinson Memorial Hall, located on Burns Street in Gol Gol, which serves as a town hall for the residents.



**Figure 9.1: Community facilities & services**

## 9.5 Recreational facilities and opportunities

Buronga Gol Gol has a number of existing open spaces and recreational areas as shown in Table 9.1 and Figure 9.2. These include parks, playgrounds and sporting fields and recreation reserves. Most of the recreational facilities are generally well maintained.

James King Park has been recently upgraded and fitted with improved infrastructure and facilities such as a playground, park table and benches, boat ramp and riverside beach to enhance its unique and picturesque nature. Council has also recently installed LED flood lights at the Carramar Drive Sporting Complex, which has improved the quality of lighting and security for evening and night time users. The newly installed lighting has elevated the standard of the oval to a semi-professional level as per the Community Sporting Facility Lighting Guide for Australian Rules Football, Football (Soccer) and Netball.

Buronga Gol Gol is also serviced by a range of community organisations including sporting clubs (football, netball, cricket, basketball, tennis), service clubs such as Lions, Parents and Citizens and Senior Citizens. These community groups organise and participate in various community events such as the Australia Day Breakfast, Country Fete and International Food Festival, continuously building social cohesion in the area. In addition, due to the location of Buronga Gol Gol on the banks of the Murray River, the community benefits from water-based recreational activities such as boating, skiing and fishing.

Most of the existing well-developed and equipped recreational facilities and open spaces in Buronga Gol Gol are generally located on the southern side of the Sturt Highway along the edge, or within the floodplain of the Murray River. It would appear that these areas can only be accessed by motor vehicles, as pedestrian access from the existing and new residential areas on the northern side of the highway is extremely difficult. This is a major concern given that little or no public open space, children playgrounds or other passive and active recreational areas are being provided in recent developing subdivisions.

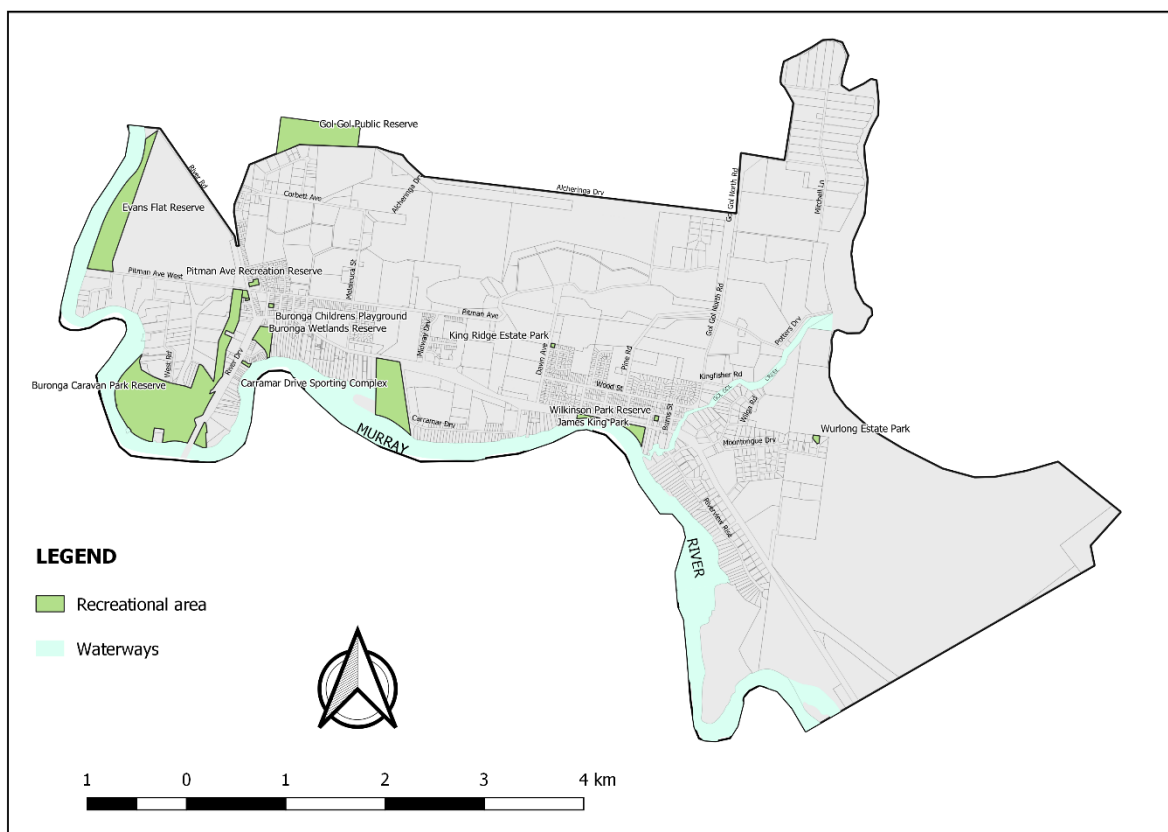
The structure plan needs to include principles and strategies for ensuring an accessible, integrated and adaptable network of passive and active open space and recreational facilities in Buronga Gol Gol. Key considerations for open space and recreational planning in the structure plan should include:

- Access and Availability - Consider accessibility of location, design, cost and availability to all residents
- Equity - Aim at providing equal opportunities for residents to participate in activities regardless of their income, gender, age, disability or ethnic background
- Participation - Encourage community participation in planning and management of facilities
- Integration - Consider the special needs of people with disadvantages and disabilities and integrate these with "mainstream" provision
- Cultural Relevance - Consider cultural background of local residents and how this could influence provision
- Quality - Provide the highest possible quality of provision

- Efficiency and Effectiveness - Consider cost effectiveness and operating efficiency at the planning stages
- Advocacy - Consider the needs of those who may not be in a position to adequately represent their own interests
- Adaptability - Allow for flexibility and adaptability to suit changing community needs.

**Table 9.1: Summary of recreational facilities**

Recreation facility/Open space	Location	Purpose	Existing facilities	Remarks
Carramar Drive Sporting Complex	141 Carramar Drive, Gol Gol	Sporting field	Football oval, Netball court, Basketball court	Additional oval required
James King Park	29 Adelaide Street, Gol Gol	Public park, playground, recreation area	Children's playing equipment, Baby change table, BBQ, Boat ramp, Riverside beach, seats & tables	Good condition
Wilkinson Park Reserve	27-29 William Street, Gol Gol	Playground	Children's playing equipment, seats & tables	
Wurlong Estate Park	Wurlong Drive, Gol Gol	Public park	Seats & tables	Good condition
Buronga Children's Playground (Police Park)	Chapman Street, Buronga	Playground	Children's playing equipment, seats & tables	
Buronga Wetlands Reserve	Sturt Highway, Buronga	Public park, playground	Children's playing equipment, seats & tables	Good condition
Pitman Avenue Recreation Reserve	Silver City Highway, Buronga	Reserve		Yet to be developed
Buronga Caravan Park Reserve (Buronga Riverfront)	West Road, Buronga	Recreation area (walking trail, informal picnics)	Walking paths, boat ramp	Provide and upgrade facilities as per Buronga Riverfront Master Plan
Evans Flat Reserve	Pitman Avenue West, Buronga	Recreation reserve		
Gol Gol Public Reserve	Silver City Highway, Buronga	Recreation reserve		Yet to be developed
King Ridge Estate Park	Dawn Avenue, Gol Gol	Public park, playground, recreation area		Yet to be developed



**Figure 9.2: Recreational areas**

## 9.6 Community safety

Crime statistics from the NSW Bureau of Crime Statistics and Research (BOCSAR), show that Buronga Gol Gol experienced a significant fall in major categories of offence between March 2019 and March 2020. Over the 12 months period, there was decrease of 25% (from 12 to 9) in sexual offences and 21% (from 36 to 15) in drug offences. In addition, the same number of cases were recorded for offence types such as malicious damage to property (15 cases) and intimidation, stalking & harassment (10 cases) in both 2019 and 2020, while no cases of murder and robbery offences were recorded over the 12 months. However, a few major categories of offences showed an increase over the period, with recorded cases of:

- Disorderly conduct more than tripling from 2 to 7 (250%);
- Breach of justice procedures increasing 47% from 19 to 28; and
- Theft increasing 4% from 75 to 78

The crime statistics generally suggest a trend towards improving community safety in the Wentworth Shire townships. However, the upsurge of some reported major offence types indicates a broader community effort is required to create a safer environment for all people

to live, work and travel in the Shire. This means building partnerships between police, government agencies, local councils, community organisations and individuals to promote community safety.

The Crime Prevention Plan 2013-2017 was Council's most recent policy guide for preventing crime and improving community safety in the Shire. The plan provided a framework for the community, Council and NSW Police to work together to implement a range of strategies to assist in maintaining a safe community.

Strategies for crime prevention proposed by the plan included introduction of CCTV at hotspots, CPTED audit for target hardening, promoting good practice home and business security information, implementing the WSC Closing the Gap Indigenous Employment Program and supporting Learner Driver Mentoring Program. Although the plan's implementation period has ended it is yet to be reviewed and a new one developed.

While there is no one generic prescriptive method for crime prevention in land use planning, there is a set of generally agreed upon principles which can be considered at the local level in a wide range of different contexts. These include:

**Awareness of the environment** - Refers to the layout of a place being understandable, including the ability to see and understand the significance of what is around and what is ahead. This is achieved through adequate lighting, clear sightlines and elimination of entrapment spots in order to avoid dangerous situations.

**Visibility by others** - Refers to a person not being isolated when using a building or space because the design facilitates them being seen by others. This is achieved through reduction of isolation, improvements to the mixture and intensity of land use and the intelligent use of "activity generators".

**Finding help** - Refers to a person receiving assistance through the provision of clearly marked avenues to assistance such as emergency exits, alarms and phones. Also, the ability to escape, communicate or find help when in danger through improved signage and legible design is important.

In NSW, collaboration between the police, state government departments, local governments and private sector organisations have also resulted in the development of strategies and tools for improving crime prevention through land use planning. These include:

**Crime Prevention Through Environmental Design (CPTED):** This strategy aims to influence offender's decision-making process. It uses urban planning, design and place management strategies to reduce the likelihood of necessary crime ingredients from intersecting in time and space. These strategies fall into 4 broad categories, namely: surveillance, access control, territorial reinforcement and space management. The CPTED has been incorporated in the Wentworth Development Control Plan 2011. The WDCP 2011 provides specific design controls for lighting, fencing, car parking, entrapment spots & blind corners, landscaping, communal/public areas, movement predictor and entrances to achieve the objectives of CPTED in the Shire.

**Safer by Design Evaluation and a Companion to the Safer by Design Evaluation:** These evaluation tools outline methods that council planners, designers and crime prevention professionals can use to identify and reduce crime risk within the built environment. The evaluation tools are contextually flexible and suggest crime treatments based on CPTED principles and measures such as location, entries, natural surveillance, lighting and landscaping. As indicated above, crime prevention measures are currently incorporated into Council's DCP and are considered through the development application assessment process.

## **9.7 Community Wellbeing and Health**

In Australia, the relative socio-economic advantage and disadvantage of a given area is measured using the Socio-Economic Indexes for Areas (SEIFA) produced by the Australian Bureau of Statistics (ABS). The SEIFA assigns selected areas an index 'score' which indicates whether the area is relatively better or worse off than the Australian average score, based on socio-economic census information such as household income, education, profession, household and dwelling size etc.

According to the latest SEIFA indexes created from the 2016 Census of Housing and Population data, the Australia-wide average Index of Relative Socio-Economic Disadvantage (IRSED) was around 995. This means that an area with a score below 995

can be considered relatively disadvantaged and an area with a score above 995 can be considered relatively advantaged. The further away from 995 the scores are, the more or less disadvantaged the given area is. The average scores for the NSW State and the Wentworth Shire from the 2016 census were 978 and 957 respectively.

The index of relative socio-economic disadvantage indicates Buronga and Gol Gol are scored at 978 and 1043 respectively. This gives the entire study area an average score of 1,011, which compares favourably with the national, state and local government area level averages. In other words, the Buronga Gol Gol study area has a relatively low disadvantage socio-economic advantage.

While the SEIFA index provides an indication of relative disadvantage, the World Health Organisation has also found that people's lifestyles and the conditions in which they live and work strongly influence community health and wellbeing. This has led to a growing understanding of the remarkable sensitivity of health to the social environment and to what has become known as the social determinants of health.

Good health involves reducing levels of educational failure, reducing insecurity and unemployment and improving housing standards. Societies that enable all citizens to play a full and useful role in the social, economic and cultural life of their society will be healthier than those where people face insecurity, exclusion and deprivation. In Buronga Gol Gol, achieving better community wellbeing and health outcomes will require developing strategies and actions that can help improve and/or address shortfalls in the built environment, local economy, infrastructure and community facilities and services in the structure plan.

## **9.8 The way forward**

The structure planning process must establish a number of principles to support current and future community needs. In particular the key issues of community wellbeing and safety and provision of public open spaces require consideration at the structure planning level. Those issues associated with the delivery of services and facilities such as education and health for the local community require further engagement with those key service delivery agencies to identify specific spatial needs within the study area.

## Chapter 10      The Natural Environment

This chapter reviews the environmental conditions and risks in the Buronga Gol Gol area. These existing natural resources and environmental factors will influence the strategic directions of the structure plan.

### 10.1 Existing environmental conditions

#### 10.1.1 Topography and landscape

The Buronga Gol Gol region is renowned for its unique picturesque topography and landscape (refer Figure 10.1). The landscape is marked by beautiful red cliffs which span along the Murray River.

Despite the general flat terrain of the region, the majority of Buronga Gol Gol (e.g. Midway Area) is elevated high above the Murray River natural flow level. The elevations of the built-up and urban growth areas range between 34-56 m AHD. This topography makes Buronga Gol Gol reasonably safe and protected from flooding, albeit some parts of the township (e.g. West Buronga) are subject to inundation.

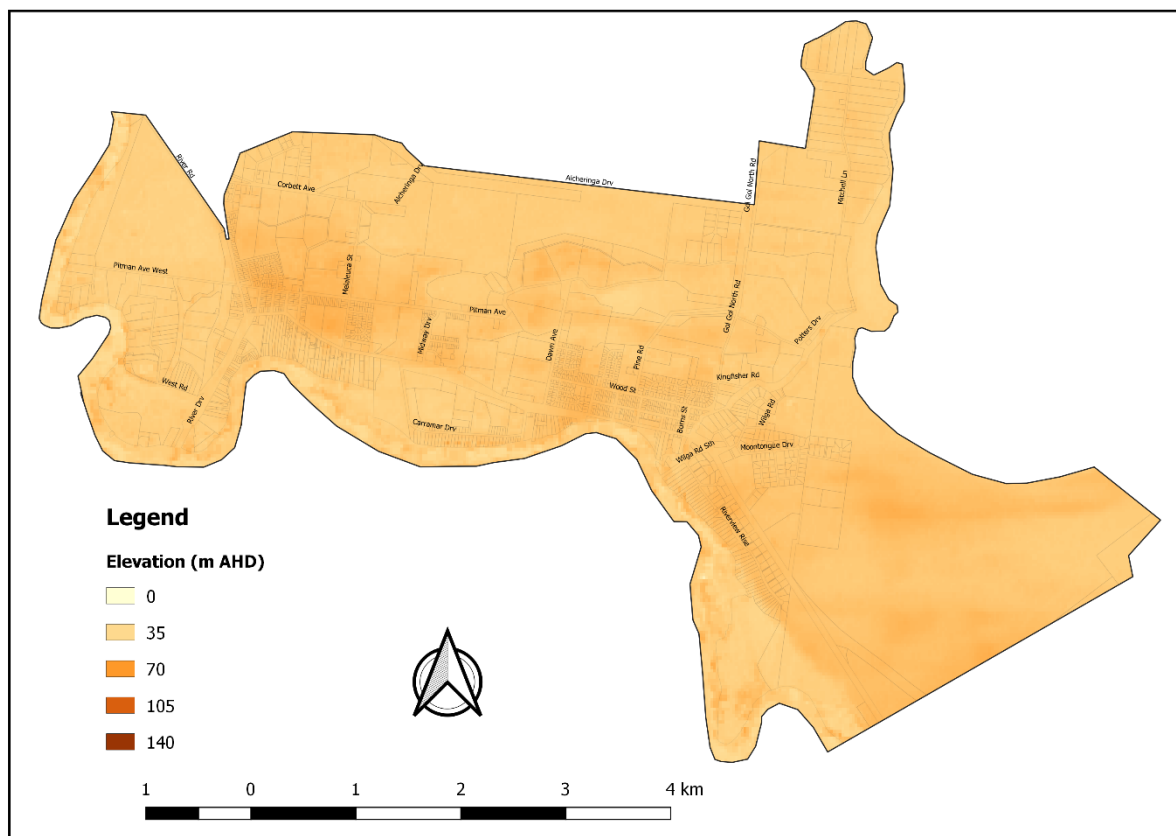


Figure 10.1: Landform and topography

### 10.1.2 Land systems and soils

The Buronga Gol Gol study area is represented by six land systems, and associated soil associations (refer Figure 10.2). The more elevated areas on which urban development is concentrated are situated within Bulgarnurra land system, comprising calcareous earths. The active alluvial areas along the Murray River are mapped as Riverland land system, and comprise grey clays and duplex soils. Lower lying land comprising a large part of the northern study area is mapped as Canaly land system and also comprises clays and duplex soils. Other land systems within the Buronga Gol Gol study area are Arumpo, Victoria and Overnewton, which consist of brown sands, grey clays and duplex soils and calcareous earths respectively.

- ***Calcareous earths***

These soils are also termed as *red calcic kandosols* and have developed on the open, elevated plains and comprise red coloured sand to clay loam topsoil, increasing in clay content and calcium carbonate with depth. There is a discontinuous and irregularly distributed underlying clay layer which impacts significantly on soil behaviour. The clay typically has high shrink-swell properties (low to highly reactive), is highly saline and has a major impact on the distribution of shallow groundwater.

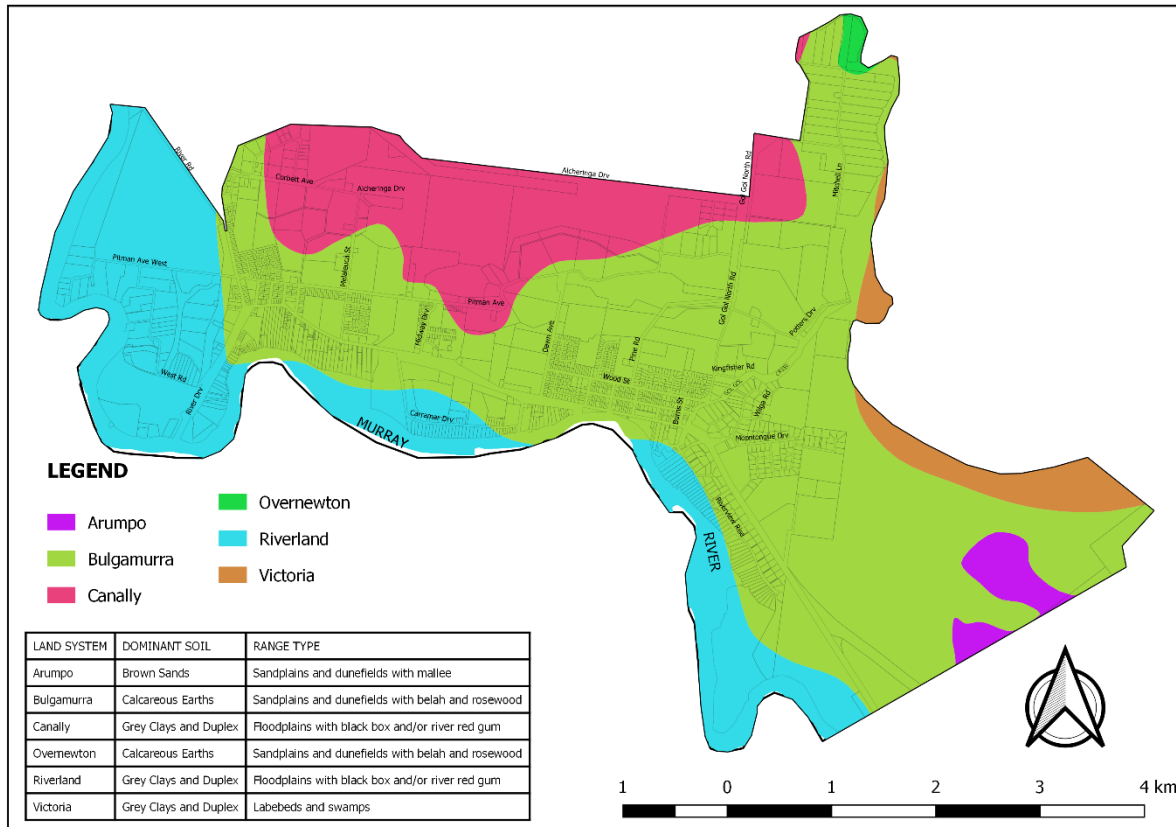
- ***Brown sands***

Brown sands occur on the sandplains in the east of Gol Gol and comprise coarse sand grading to sandy loam and sandy clay loam with depth. The brown sands are well-structured throughout the profile with earthy fabric and vigorous effervescence. The brown sands have low water retention capacity and are prone to wind erosion. The underlying sandy clay has high shrink-swell properties and the subsoils become increasingly saline and alkaline with depth.

- ***Grey clays and duplex soils***

Grey clays also termed as *grey vertosols* occur along the main river channels (Murray River, Gol Gol Creek) and in low lying floodplains and lake beds, represented by the southern extension of Gol Gol Swamp. The grey clays have a high content of strongly structured clay through the profile, and have a distinctive self-mulching surface layer which is most apparent in dry conditions. The grey clays occur in association with duplex soils which typically have

formed in lunettes and occur on slightly more elevated surfaces. This group of soils is likely to be subject to flooding or inundation, and also have major shrink-swell potential. The soils are therefore significantly constrained for urban development.



**Figure 10.2: Land systems and soils**

### 10.1.3 Water resources

The key water resources within the Buronga Gol Gol area include the Murray River, Gol Gol Creek, the existing floodplains and wetlands (refer Figure 10.3). These rivers and waterways are important assets that the community values, add great amenity and appearance to the townships and serve as attractions to the area.

There is approximately 14 kilometres of Murray River frontage both above and below the weir and Lock 11 within the study area boundaries. Approximately 82% of the study area is within two kilometres of the river with almost all residential developments and other such developed lands in the southern part of the study area actually adjoining the river for an approximate frontage of 10 kilometres. Additionally, there is a further 4 kilometres of river frontage that is either directly adjacent to or in very close association with areas of high intensity agriculture.

Most of the other perennial creeks and water bodies within the study area either have large parcels of land zoned for development adjacent to the waterway or within the floodplain or have been altered in some form by the inclusion of dams and other storages 'on line'. For example:

- Gol Gol Creek has development on both sides of the creek;
- Gol Gol Lake has development on the southern side; and
- A weir has been constructed in the lower sections Gol Gol Creek. This weir is drained for 6 weeks in July/August to undertake maintenance to locks and dredging.

As a result of the existing land use patterns, the river and creek frontages have little native vegetation left on lots with dwellings, bank stability has been interfered with through the removal of native vegetation and property owners undertaking work on the bank, and there is no public access to the waterways where there are properties with dwellings disrupting drainage corridor continuity. In addition, the floodplains contain or are exposed to developments that are likely to adversely affect the conservation value of the riparian zone. This has implications on several management issues including runoff water quality and protection of the riparian buffer zones or vegetated corridors.

A number of managed and unmanaged wetlands, as well as salt bed evaporation ponds, are located within the Buronga Gol Gol study area. Runoffs from the both urban and agricultural lands are directed towards most of these water areas, which act as retention basins. There are also other salt beds located outside of the study area that assist in reducing the salinity of the runoff flows into the area.

There is no specific data available on the levels of pollution of waterways within the study area. However, Council has adopted a Stormwater Management Plan for the Local Government Area which provides guidance on the types and levels of pollution that are likely to occur within the study area. The general sources of pollution nominated by the plan include:

- Sewerage Treatment Plants
- River Boat Pump stations
- Effluent Reuse schemes

- Industrial discharges (including pollution from flooding of light-industrial premises)
- Diffused sources including kerbside vehicle wash down & maintenance, general littering, poor garden practices and animal faeces

There is one river boat pump station on the Murray River at Buronga. While the operation of the station by the general public presents potential for spillage, issues associated with the possible polluting discharges to the Murray River are not covered by the SMP.

Effluent reuse schemes are not prevalent in Buronga Gol Gol and are therefore unlikely to impact on pollution within the area.

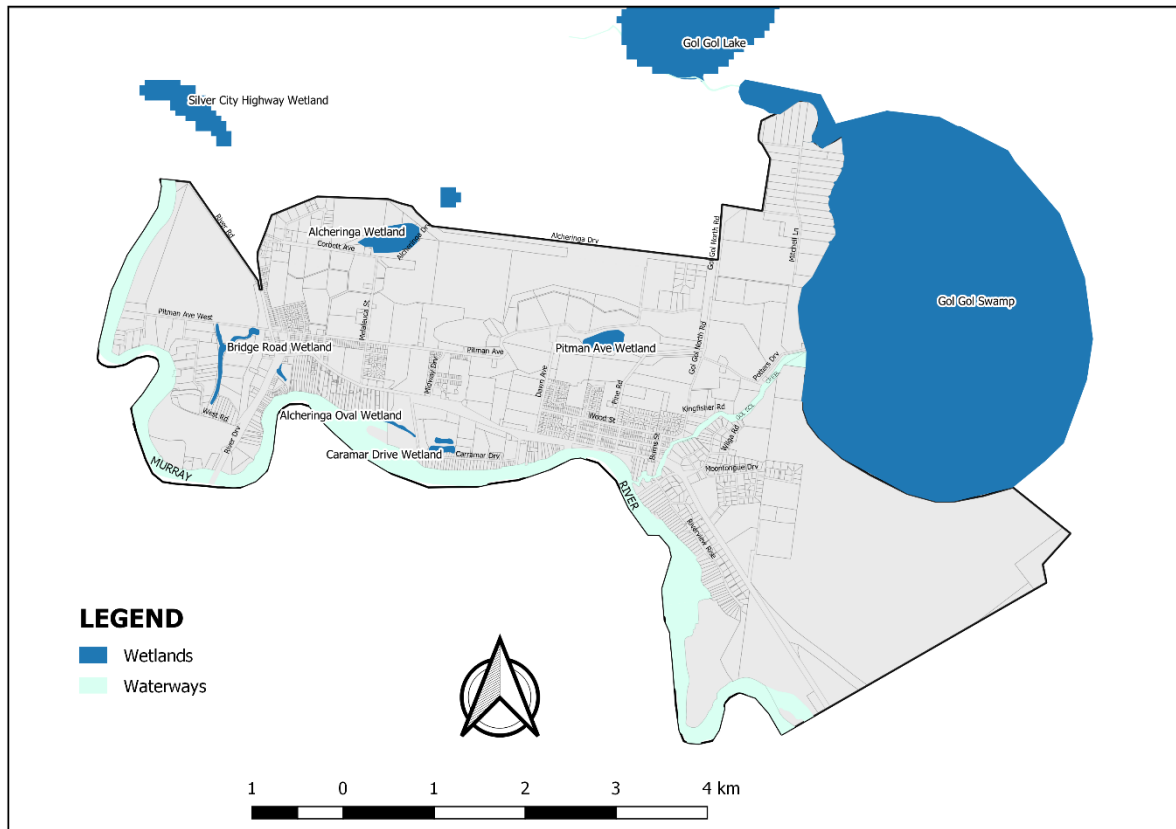
Both industrial discharges and other diffuse sources will remain potential polluters in Buronga. In particular, the growing light industrial activities at Buronga Industrial Precinct have the potential to generate polluting discharges to the wider environment during serious flood events, if good management associated with the handling and storage of chemicals are not being practiced. Other pollution issues specifically identified by the Stormwater Management Plan within the study area include uncontrolled stormwater outlets and the direct discharge of highway runoff to the Murray River.

Not considered within the Stormwater Management Plan but important in the Buronga Gol Gol study area, is the impact of rural land on pollution loads. Agricultural and related activities are prevalent within and outside the study area and can generate high loads of suspended solids and nutrients which are conveyed to waterways in storm events. These pollutants can potentially silt up the waterways and increase eutrophication processes within water bodies.

The SMP prescribes a number of structural and non-structural control measures for minimising the impact of stormwater on receiving waterways and areas of urban bushland. Those considered to be particularly applicable to the Buronga Gol Gol study area include:

- Gross pollutant traps (GPT);
- Constructed wetlands;
- Trash racks;
- Oil/ grease separators;
- Community education and participation activities;
- Land use and site planning;

- Evaluating and improving councils O&M activities (weed clearing, bin collection etc); and
- Council management activities (planning and development control)



**Figure 10.3: Water resources**

#### **10.1.4 Biodiversity (Flora & Fauna)**

The Buronga Gol Gol study area is largely located within the Riverina Biogeographic Region, with only a small portion of the eastern part located within the Murray-Darling Depression region. The area has a unique riverine and arid vegetation that is dominated by tree species that are well suited to the Murray River wetlands and the semi-arid Mediterranean climate of the region.

Remnant native vegetation, either in the form of open woodland, woodland or open forest comprises a total of approximately 1202 hectares, or 39% of the study area. Remnant native vegetation of the study area and proximate area can be broadly described as:

- Red Gum/Black Box Riparian Forests (*Eucalyptus camaldulensis*);
- Black Box Woodlands (*Eucalyptus largiflorens*);
- Chenopod Mallee;

- Chenopod Shrubland;
- Acacia montana (shrub wattle species); and
- Acacia notabilis.

The most extensive of these vegetation communities is the Black Box woodlands that occur primarily on Crown lands in the northern section of the study area, as well as on a large parcel of private land in the eastern area. These areas would also represent the least disturbed vegetation, despite aerial photographic evidence of a variety of disturbances. In addition to the native vegetation, there are extensive areas of irrigated cropping which comprise 28% of the study area and include crops such as grapes, asparagus and citrus. Other land cover categories of the area include urban developments (7%) and cleared/highly disturbed land (12%). These land cover types are shown in Figure 10.4.

Habitat value of the remnant vegetation is largely linked to the history of past use for each discrete area. A wide range of species are likely to occur within the study area including a number of threatened flora and fauna species including birds, reptiles, frogs, mammals and flora. While a greater number of threatened species are likely to occur, some which are known from the Buronga Gol Gol area include:

- Little Pied Bat
- Kultarr
- Southern Bell Frog
- Freckled Duck
- Square-tailed Kite
- Australasian Bittern
- Major Mitchell's Cockatoo
- Brown Treecreeper
- Grey Falcon
- Brolga
- Gilbert's Whistler
- Hooded Robin
- Regent Parrot

- Painted Snipe
- Black-tailed Godwit
- *Casuarina obesa*
- *Santalum murrayanum*.

For each of these species, particular habitat requirements will determine their actual occurrence. However, the number of records for threatened species both within and adjacent to the study area indicate habitat potential within the area is relatively good. As indicated by the range of species, habitats used by threatened species would include all vegetation types and landform features such as wetlands.

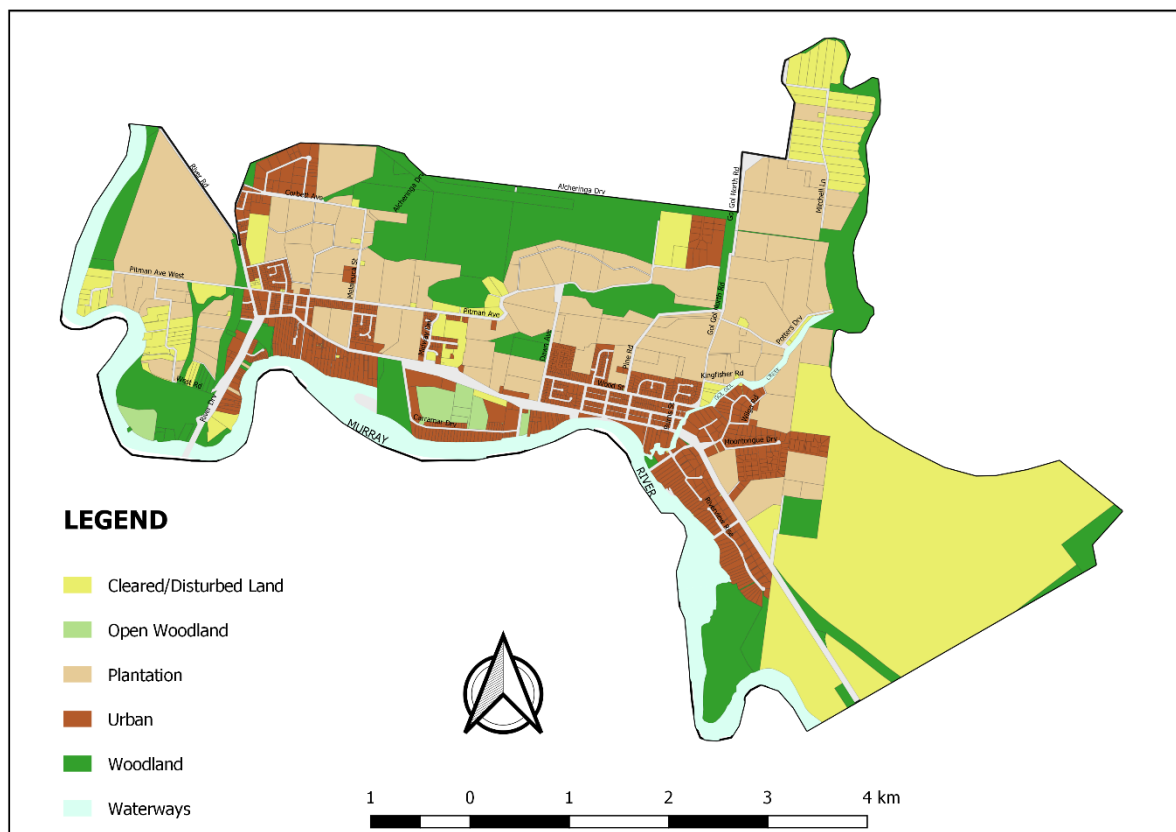
Corridors and linkages through the study area have been substantially affected by land use and development. The extent of irrigated cropping is probably the primary barrier to the ability of many flora and fauna to move about the local landscape. While this effect is primarily associated with areas in proximity to the Murray River for access to irrigation water, it effectively creates a barrier between the riverine areas and other communities beyond the limit of intensive agriculture. In addition to the impact of agriculture, residential development within Buronga and Gol Gol plus the Sturt and Silver City Highways also represent barriers to the unhindered movement of native species.

Corridors of potential movement still remain within the study area, however these are substantially limited in extent and quality as a result of past development and ongoing disturbances. Specifically, the riverine community adjacent to the Murray River and Gol Gol Creek are the primary corridors. Both of these potential corridors are affected significantly by proximate development and in places the removal of native vegetation up to the river or stream bank. Despite this, Gol Gol Creek provides one of the main north-south habitat linkages within the study area. This link would be of ecological value to a range of species and it provides an element of habitat diversity within the local area that should be maintained and enhanced where possible. Other small-scale connections are also present in south-west of Buronga along Crown reserves that parallel the Sturt Highway. Additional opportunities for re-establishing habitat connectivity on the local scale should also be investigated.

Secondary to these corridors and of more limited potential are the verges of the Sturt Highway within the cadastral boundaries set aside for the road reserve. In some places the

width of the road reserve is in excess of 140 metres and while it may not be possible to create continuous links between proximate areas of habitat, the creation and management of habitat islands to act as stepping stones and temporary refuges, would assist in the maintenance of local biodiversity. This is particularly the case south of the Midway residential development area and west of Gol Gol. This strategy may also benefit from the presence of some remnant vegetation within the road reserve. Despite this, consideration should be given to the appropriate planning of habitat adjacent to a major transport route in relation to the potential risk of animal mortality by vehicle strike.

Other opportunities for the protection of natural assets would arise from the management of existing Council reserves and undeveloped Crown Lands including travelling stock reserves. Such examples would include the recreation reserve directly west of Carramar Drive, a land parcel which also adjoins the Murray River, in addition to the travelling stock reserve and other undeveloped Crown lands along the northern boundary of the study area. To further improve the potential viability of managing such areas for their biodiversity, consideration should be given to identifying a potential link between these areas, such as a link between the Murray River and the Black Box communities to the north.



**Figure 10.4: Habitat/land cover types**

## **10.2 Cultural and heritage resources**

The Buronga Gol Gol study area measures approximately 3,109 ha in area and consists largely of alluvial floodplain with developed land of private and public buildings, infrastructure in the towns surrounded by horticultural land and some areas of relatively undeveloped land along much of the northern boundary. There is a mixture of native and introduced vegetation, cleared and built-up land and varying degrees of ground disturbance consistent with these varying impacts on the landscape.

It is estimated that there are 54 previously recorded Aboriginal sites within an area of 150 square kilometres in and around the study area. Results of extensive searches in the Aboriginal Heritage Information System (AHIMS) indicated that about seventeen Aboriginal sites are located within the study area or immediately adjacent to its boundaries. These sites represent activities including the collection, processing and consumption of shellfish; extraction of bark; and general activities associated with camping such as cooking and stone tool production, use and/or maintenance.

The Barkandji Nation land rights also co-exist on a multitude of Council reserves and crown owned land, as well as on some private properties in the study area. Moreover, Barkandji Elders and people live on country and many work in cultural heritage roles in the community in and around Buronga Gol Gol in organisations such as Barkandji Maraura Elders Environment Team (BMEET) and Barkandji Native Title Group Aboriginal Corporation (BNTGAC).

There are three locally significant heritage items in Buronga Gol Gol listed in the Wentworth Local Environmental Plan 2011. These are:

- the remains of the Old Mildura Bridge dating to 1927
- the Former Paddlewheel Hotel (Gol Gol Hotel) dating to 1877; and
- the Gol Gol Cemetery dating to 1878.

### **10.2.1 Predictive modelling of cultural heritage**

A predictive modelling of Aboriginal and European archaeology of the Buronga Gol Gol study area was undertaken by David Richardson as part of the preparation of the Buronga Gol Gol Structure Plan 2005. The objective of the predictive modelling was to provide predictive statements regarding sites and relics that have not previously been recorded, as well as a

breakdown of the study area into zones of archaeological sensitivity based on known site locations and potential locations. The modelling has been updated based on current land use and disturbance patterns in the study area (refer Figure 10.5).

The findings of the predictive model indicate that the majority of the area displays a moderate to high sensitivity for Aboriginal sites. In general, the assessment found there is potential for:

- middens, open stone artefact scatters, isolated finds, scarred trees, potential archaeological deposit and burials to be present in the study area; and
- unlisted European heritage items or archaeological sites to be present within the study area are identified to range from moderate to high.

The specific findings of the assessment in relation to Aboriginal and European archaeology are summarised below.

#### ***Predictive Modelling - Aboriginal archaeology***

The assessment found that the majority of the study area is of moderate to high archaeological sensitivity and there is a high potential for Aboriginal sites to be present. It predicted that there is:

- a moderate to high potential for scarred trees in the remnant Black Box communities
- a moderate to high potential for middens along the margins of the river and creeks, particularly on the more elevated calcareous earths
- a moderate to high potential for open campsites within the study area, and they are most likely to occur on the more elevated sections of floodplain such as the areas associated with Black Box woodlands or in association with middens or shell scatters
- a moderate to high potential for burials within the study area, and these sites may occur in any well drained easy digging soils
- potential for isolated finds to occur in all landform units
- a high potential for sites along the margin of Gol Go Lake
- despite European land use, a potential for areas of intact archaeological deposit to occur below the horticultural zone, the evidence of which may or may not be visible on the surface

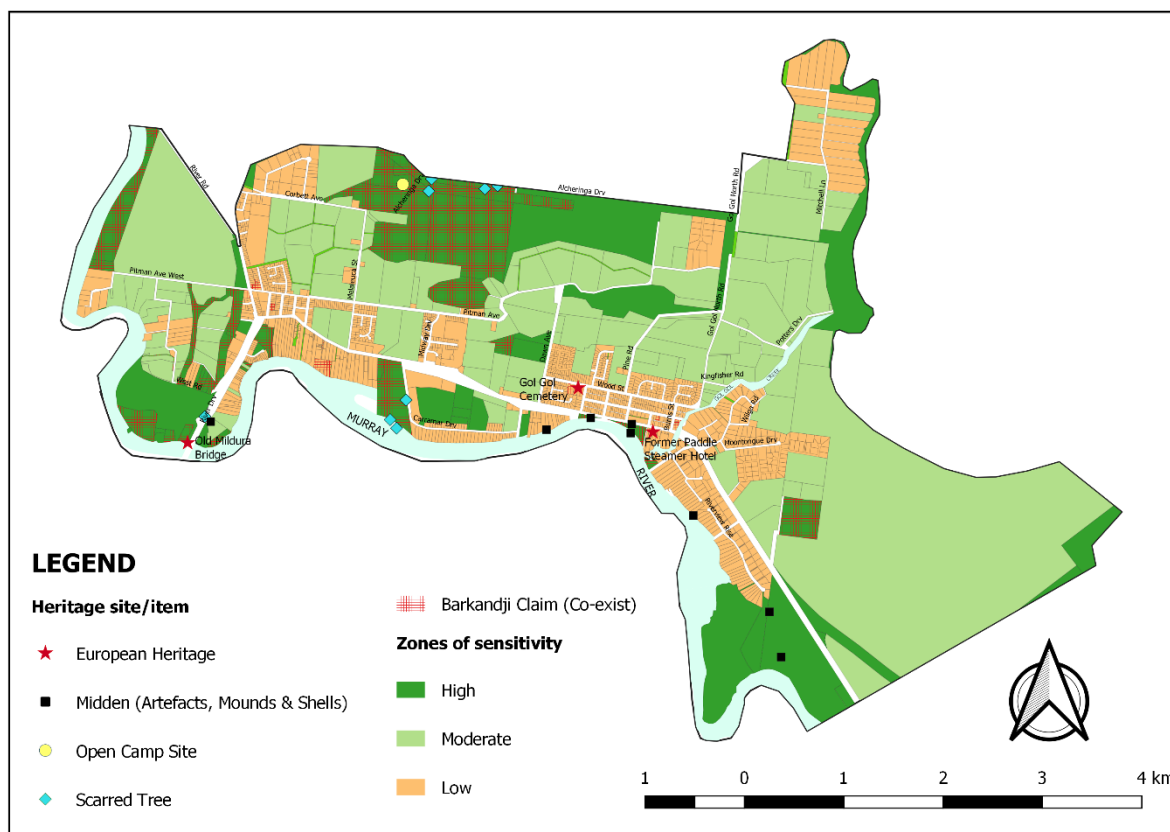
- potential for large and complex sites most likely to be located within 500 metres of the junction of water courses
- the potential for all sites is higher outside the urban limits of Buronga Gol Gol.

### ***Predictive Modelling - European archaeology***

The assessment found there is high potential for additional items of European heritage to be present in the study area. The highest sensitivity for sites would tend to be along the river and highway margins and in the urban centres. Historical themes for which there is a predicted moderate to high sensitivity are:

- townships (or villages)
- river transport and trade
- road transport and trade
- irrigation and horticulture.

These findings constitute important cultural heritage constraints and opportunities for the planning and development of the Buronga Gol Gol area. Therefore, the structure plan has to consider and incorporate appropriate management and mitigation measures to ensure long-term protection of both known and potential significant cultural heritage resources.

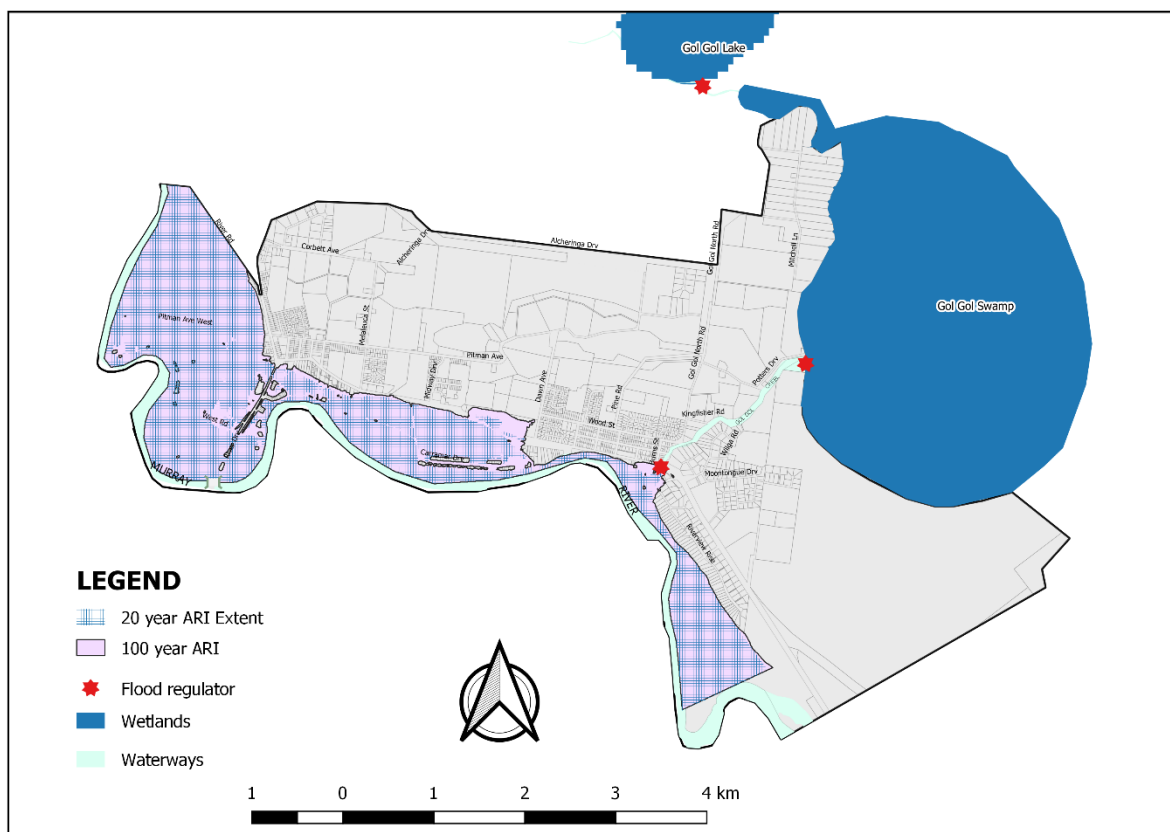


**Figure 10.5: Heritage items and archaeological sensitivity**

## 10.3 Environmental risks

### 10.3.1 Flood risks/hazards

Generally speaking, the majority of Buronga Gol Gol study area is reasonably safe and protected from flooding with most of the densely developed area elevated high above the Murray River natural flow level. It is noted three (3) flood regulators, including a radial arm gate, have been installed along the course of the Gol Gol Creek to control flow access from the Murray River to the Gol Gol Creek, making the land north of the highway generally safe from all levels of riverine flood including the 1956 1 in 100-year flood level. However, most of the land adjoining the Murray River and Gol Gol Creek is subject to flooding (refer Figure 10.6). In addition, some developments in the Moontongue area have been affected by minor flash floods in recent times following moderate to heavy rainfall events.



**Figure 10.6: Flood affected land**

The nature and extent of the flood problem have been detailed in Draft Wentworth Flood Study prepared by Advisian (Worley Parsons Group). The study found that substantial proportion of Murray River floodplain within the Buronga Gol Gol study area is at risk of flooding during events up to and including the Probable Maximum Flood (PMF) and properties will already be at risk during a 20-year ARI flood. The risk and number of properties increases during a 100-year ARI flood as floodwaters rise by over 1 metre across most locations. The estimated peak floodwater levels for major flood events at key locations within the study area are shown in Table 10.1.

**Table 10.1: Peak floodwater levels**

Location	Peak level ( <i>mAHD</i> )					
	10 year ARI	20 year ARI	50 year ARI	100 year ARI	200 year ARI	Probable Maximum Flood (PMF)
East Carramar Drive	38.08	38.74	39.54	39.91	40.56	42.40
West Carramar Drive	38.01	38.67	39.39	39.48	40.49	42.30
Chaffey Bridge / Sturt Hwy	35.80	38.46	39.24	39.56	40.18	41.99
Lock Island / Lock 11	37.74	38.40	39.14	39.56	40.02	41.79

Source: Draft Wentworth Flood Study (2017)

In addition, the study findings indicate that:

- Floodwater depths are typically greater than 0.5 and 1.5 metres at the peak of the 20- and 100-year ARI floods. At the peak of the PMF, floodwaters depths are generally in the range of 5-6 metres along the Murray River floodplain.
- The flow velocities are predicted to be substantially higher, generally exceeding 1.0 m/sec within the Murray River channel and 0.3 m/sec across the floodplain during the 100-year ARI event. Peak flow velocities during the PMF are predicted to typically range between 0.5 and 0.9 m/sec.
- In large flood events like the 100-year recurrence flood, the majority of flooded land would fall within the high hazard category defined in the 'Floodplain Development Manual' (2005).
- The hazard mapping indicates that a large proportion of the floodplain would be subject to a high to very high provisional flood hazard, which is unsafe for motor vehicles and wading by adults, albeit may be suitable for both light and heavy construction.

The above suggests that the flood affected land within Buronga Gol Gol study area is generally unsuitable for dense residential or commercial development without some form of a levee embankment or other preventative measures. Nonetheless, some parts of the floodplains such as the West Buronga area, which predominantly exhibit the characteristics of a rural residential area can be considered for rezoning to E4

Environmental Living zone with minimum lot sizes ranging from 1 to 3 hectares to allow for low density development. This will help satisfy the existing high demand for river frontage land in the study area while avoiding any excessive property damage from flood events.

### **10.3.2 Bushfire hazard**

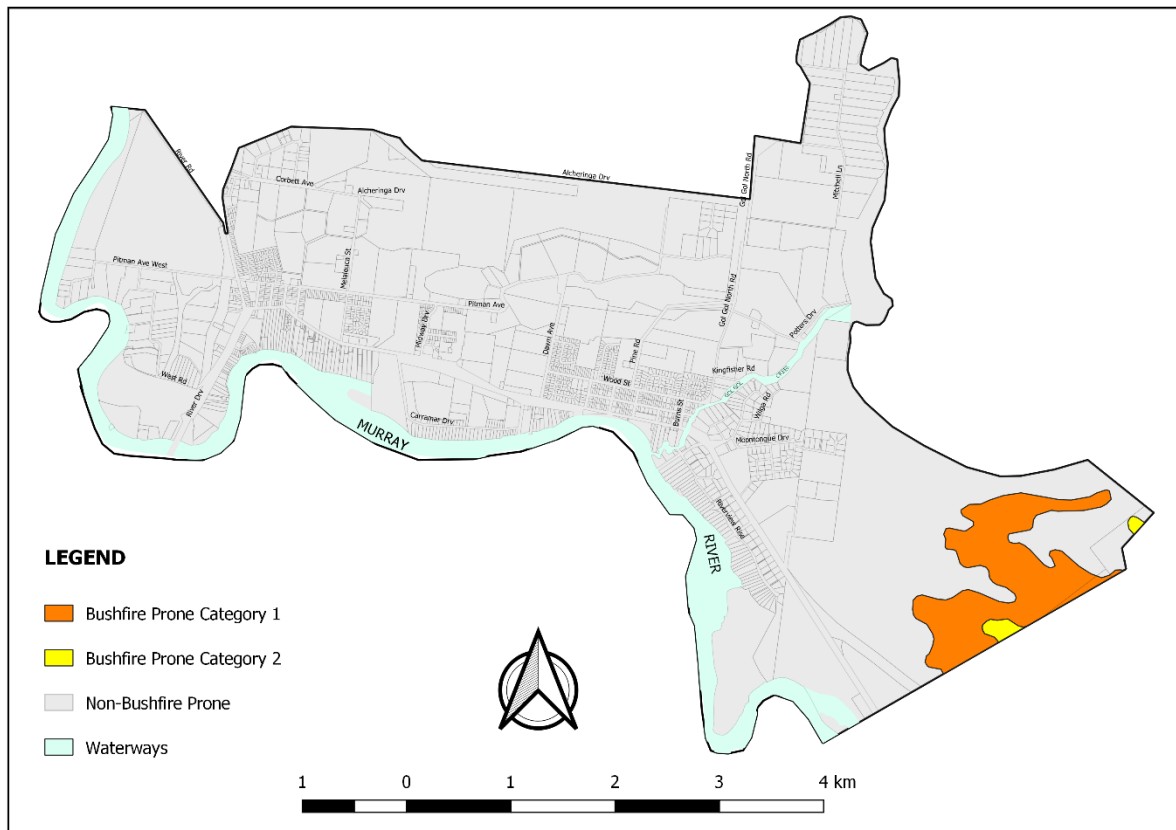
The impact of bushfires on the environment is extensively documented. This also influences the design and location of new development as well as strategies to assist with existing development. The bushfire risk levels for the study area have been mapped by the NSW Rural Fire Service as shown in Figure 10.7.

Within Buronga Gol Gol, bushfire risk is limited to only the eastern interface of the study area with the Mallee scrub, which contains some of the most flammable vegetation found in semi-arid NSW. The remaining part of the study area faces an insignificant level of bush fire risk. This is due in part to the fact that most of the study area is urban area and also surrounded by major irrigated areas which create a buffer zone between the township area and the bushland areas.

Despite the low bushfire risk to the study area, there are a number of potential fire risks and issues relevant to Buronga Gol Gol including:

- Potential fuel and gas fires associated with service stations within the study area
- Motor vehicle and heavy vehicle accidents and chemical spills
- Local wine processing plants (not specifically within the study area)
- Low water pressure within existing residential areas
- Access design to existing residential areas for emergency response

In terms of property protection, the NSW Rural Fire Service (RFS) has a brigade and station at both Buronga and Gol Gol. The Buronga station has a heavy tanker and pump and the Gol Gol station has one light tanker and one heavy tanker. The RFS attend Hazmat (chemical) incidents. The RFS has an MOU with the Victorian Country Fire Authority. The closest structural station (for larger buildings) is located at Mildura and an agreement is in place that they will attend structural fire incidents in the Wentworth Shire. The NSW Fire Brigade has a station at Wentworth. Fire hydrants have been installed at vantage points in areas of Buronga Gol Gol that are serviced by reticulated water supply.



**Figure 10.7: Bushfire risk**

## 10.4 The way forward

Issues relating to the environment, its quality, protection and management of natural resources will play an important part in the development of the structure plan. Solving those issues are necessary and will require the community, agencies and the Government addressing the issues in a pragmatic fashion.

Consideration of soils, water resources, cultural resources, flood risks and bushfires has already commenced and will have a significant bearing on the development of the structure plan.

## **Chapter 11      The Way Forward**

This report has provided a holistic analysis and assessment of the built, social, economic and natural environments of the Buronga Gol Gol area. The report has also highlighted the constraints and opportunities pertaining to these aspects of the study area. Among others the report identifies;

- both local and regional drivers will strongly influence the future growth of Buronga Gol Gol
- the need to promote urban infilling and consolidation to ensure a sustainable and healthy built environment, while adopting a staged approach to urban land release to compliment demand
- the need to encourage and support local commercial and retail services
- the need to expand and/or improve infrastructure to adequately service future growth
- the need for more community facilities and services to support future population growth
- the need to protect the quality of the natural environment and cultural heritage.

### **11.1 Developing the structure plan principles**

The next step in the process of developing the structure plan is to prepare development principles necessary to provide the framework within which the examination of various options can be undertaken for the study area. These options will be developed in response to the findings of this report and the key structure planning principles. This step will involve both consultation with and input from the community, Council and state agencies.

The guiding principles for the study area will be based on current practice taking advantage of government policy directions and determining the expectations of what the community wants and what can be realistically achieved within the current and future planning frameworks. Nonetheless, based on findings of this report, the key leading principles should include:

- Residential land design and development principles
- Land use interface and buffer principles

- Transport and road design principles
- Infrastructure and servicing principles
- Water Sensitive Urban Design (WSUD) techniques and implementation principles
- Social and cultural needs and levels of service principles
- Riparian corridor management principles consistent with DPIE guidelines for delineating, protecting and enhancing the corridor in general and river management in particular
- Vegetation and fauna protection, management and connectivity principles
- Heritage and archaeological principles.

### **11.2 Developing the structure plan**

The development of options for Buronga Gol Gol will follow on from the identification of the principles. The options will be developed based on the constraints and opportunities identified in this report including the determination of the future land requirements, the level of infrastructure required to service the full range of land uses, the development principles and the feedback and direction from the community, Council and state agencies.

The structure plan will set a vision for future land use and development, as well as provide a framework to guide land use planning decisions and provision of infrastructure and community facilities in Buronga Gol Gol. This will provide opportunities to improve conditions in the community, ensure the sustainability of the area and enhance the quality of life for both current and future residents.

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Buronga Gol Gol Structure Plan and Background Report, David Richardson Environmental Planning, 2005

Buronga to Monak Interface Study, Tonkin Consulting, 2016

Buronga Riverfront Master Plan, Outerspace Landscape Architects, 2016

Wentworth Shire Development Contribution Plan 2018

Wentworth Shire Development Servicing Plan No 1–Water Supply and Sewerage Services 2018

Wentworth Shire Development Servicing Plan No 2–Stormwater Infrastructure 2018

Crime Prevention Plan 2013 -2017

2016 Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australian Bureau of Statistics, 2018

NSW Recorded Crime Statistics quarterly update March 2019, NSW Bureau of Crime Statistics and Research (BOCSAR), 2019

Draft Wentworth Flood Study: Extending Downstream from Gol Gol on the Murray River and Upstream from Pomona on the Darling River Sydney, Advisian, 2017

Mildura Housing and Settlement Strategy: Background Report, Hansen Partnership Pty Ltd, 2013

Riverina Water County Council (2019) Average water use, retrieved from <https://www.rwcc.nsw.gov.au/save-water/average-water-use> on 23/04/2020

## Attachments

### Attachment 1: Agency Consultation List

Number	Agency/Stakeholder Name
1	Balranald Shire Council
2	Barkandji Native Title Group Aboriginal Corporation
3	Broken Hill City Council
4	Central Darling Shire Council
5	Department of Education
6	Department of Planning, Industry & Environment - Climate Resilience and Net Zero
7	Department of Planning, Industry & Environment - Lands
8	Department of Planning, Industry & Environment - Planning & Environment
9	Department of Planning, Industry & Environment - Primary Industries
10	Department of Planning, Industry & Environment - Resources & Geoscience
11	Department of Planning, Industry & Environment - Biodiversity and Conservation
12	Environment Protection Authority
13	Government Architect
14	Mildura Rural City Council
15	Murray Darling Basin Authority
16	Native Title Service Corporation (NTS Corp)
17	NSW Department of Primary Industries - Fisheries - Western Region Office
18	NSW Health
19	NSW Police
20	NSW Roads & Maritime
21	Office of Environment and Heritage
22	Renmark Paringa Council
23	Transport for NSW
24	Water NSW

## Attachment 2: Summary of Submissions and Outcomes

Submission number	Submission	Comment/Response
Submission 1 Roy Costa Planning & Development on behalf of owner of Lot 108 DP 756946 (DOC/20/8232 & DOC/20/12707)	Rezoning Request 191 Pitman Avenue Lot 108 DP 756946 Buronga from RU1 Primary Production to RU5 Village zone. The land is already used for rural residential purposes, has access to all existing services for residential development and is not suitable for any form of agricultural use.	Following a thorough analysis of residential land demand and supply it was determined that Lot 108 DP 756946 would not be required for residential development during the term of the structure plan. However, the lot is located in the area identified as a future urban growth area so it can be considered for rezoning to RU5 Village in the medium term. It should be noted that the structure plan seeks to reduce the MLS applied to the area encompassing this lot, which would facilitate development of the lot for rural residential purposes.
Submission 2 Roy Costa Planning & Development on behalf of owner of Lot 100 DP 756946, Lot 220 DP 43259 (DOC/20/8192)	Request update on future rezoning of 104 Corbett Avenue Buronga Lot 100 DP 756946 Lot 220 DP 43259	Lot 100 DP 756946 is recommended to be rezoned from RU1 Primary Production to RU5 Village zone  Lot 220 DP 43259 is recommended to be rezoned from RU1 Primary Production to IN1 General Industrial zone

<p>Submission 3 Owner of Lot 405 DP756961 (DOC/20/10574)</p>	<p>Council is to be congratulated on such a thorough and visionary draft Buronga Gol Gol Structure Plan. Impressed with the research and summary of present situation and vision for the future.</p> <p>Suggest consideration of a boat ramp downstream of the Weir in Buronga. As far as we are aware there is not a boat ramp until Dareton, could one be constructed off River Road opposite Apex Park near the private pumps.</p> <p>Also suggest official walking access to river environs from Pitman Avenue West. At present there is a broken-down fence to enter and it is not very encouraging. Is there any intention to develop this area like the Bridge Road area?</p>	<p>The location suggested for boat ramp is outside the Buronga Gol Gol study area and is also crown owned land. The provision of additional boat ramps in the shire can be more adequately considered as part of a shire-wide tourism strategy which is an action identified in Council's Local Strategic Planning Statement, as well as in future infrastructure planning.</p> <p>Footpaths have been proposed along Pitman West Road and within Evans Flat Reserve as part of the active transport corridor which will provide direct, safe access to the riverfront.</p>
<p>Submission 4 Petition by residents in West Buronga (DOC/20/11862)</p>	<p>The proposal to rezone the West Buronga area from RU1 Primary Production to E4 Environmental Living will give property owners more opportunity to utilise their land in line with the permitted uses applicable to the E4 but is unlikely to have any impact on</p>	<p>The E4 Environmental Living zone is considered the most appropriate zone for the area as the area is subject to flooding and includes areas of significant biodiversity. Subject to the outcome of the Wentworth Shire flood study, a suitable minimum</p>

	<p>the current under-utilisation of these properties. Local residents aim to utilise their blocks for residential subdivision as most properties are too small for profitable farming and too large to manage as residential properties. Residential development has significant potential given the close proximity to existing infrastructure and Mildura services. Would like to see the area considered for rezoning to R5 Large Lot Residential.</p>	<p>lot size will be determined that ensures optimum use of the properties and minimum flood risk to the area and surrounds. The biodiversity of the area also needs to be protected.</p>
	<p>The unnamed dry creek which runs from West Road towards and across Pitman Avenue is not mentioned in the document. It is neglected and filled with rubbish, overgrown/invasive cactus and boxthorns. There is an opportunity to improve and protect the significant biodiversity of the area. Local residents have expressed interest in working together with appropriate authorities to address the issues of this creek.</p>	<p>A footpath has been proposed along the banks of the creek as part of the active transport corridor. It is anticipated that the creek and its surrounds would be maintained as part of the routine maintenance of this proposed footpath.</p>

Submission 5 Owner of Lot 5 DP 236223 (DOC/20/11913)	In general, we support the draft structure plan. However, we object to the construction of a local road on our eastern boundary where there is no public road at present.	The track identified in the plan for construction has been removed from the map identified as Figure 5.8 – Future Road Network and indicative subdivision in the plan as the track has been identified as an access to a river pump on private property.
Submission 6 Representative of Owners of Lot 1 DP1182353 (DOC/20/11929)	<p>One of the best strategic planning documents Council has ever exhibited. The structure plan includes allowance for a significant increase in the Buronga Gol Gol population and fills in many gaps.</p> <p>We believe the Northbank tourism/lifestyle amenities will complete the Structure Plan. Northbank is a priority project in the Destination Riverina Murray NSW Plan and Western Murray Regional Economic Development Strategy 2018-2022.</p> <p>The proposed B2 zone for commercial development is still a very small area compared to Mildura considering the increase in the Buronga Gol Gol population. Without Northbank residents will still have to travel to Mildura to watch movies, do</p>	<p>In Sections 2.1 &amp; 2.4.4, the structure plan acknowledges North Bank on Murray as one of the developments and planning proposals that would influence the growth and development of Buronga Gol Gol if approved.</p> <p>The tourism and economic development implications of Northbank can be more appropriately considered in a shire-wide tourism strategy which is an action identified in Council's Local Strategic Planning Statement.</p> <p>The extent of the impacts of this planning proposal on the growth of the area can be more appropriately assessed and integrated into the Plan during the scheduled review of the plan following this planning proposal</p>

	<p>most shopping or engage in most non-traditional sport/recreation. Aged Care and Seniors Housing is compatible with the Northbank site and would allow the Dawn Avenue and Sturt Highway land to be used for other purposes (this area is prone to flooding where Northbank is not). If Aged Care and/or Seniors Housing was permitted on the Northbank site, 5 acres could be set aside for this specific use.</p> <p>Northbank fits seamlessly into the Structure Plan by potentially providing a range of entertainment and hospitality services that both residents of Buronga Gol Gol, Mildura and tourists will use. Given that Council has previously shown its support for Northbank, a new section entitled Tourism &amp; Entertainment Facilities should be in the Structure Plan. As the Northbank site represents almost 30-40% of the Structure Plan study area it is suggested that the adoption of the Structure Plan be delayed until a final outcome for the Northbank Planning Proposal</p>	<p>having been issued a gateway determination to proceed.</p> <p>Council supports the investigation into alternative future uses for the land that will be provide economic and social benefits to the overall community.</p>
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	<p>is received. Or alternatively, a mini review of the Structure Plan be undertaken when the outcome is known.</p> <p>The site could be suitable for other uses such as large lot residential, aged care, caravan park, bulky goods retail however an integrated tourism development is the very best outcome for the Buronga Gol Gol community.</p> <p>The biodiversity mapping applied to our land needs to be amended in line with recent approved clearing of the site. Cultural and Indigenous Heritage map should not include this site in line with the submitted evidence.</p> <p>Council support is requested to remove the redundant road reserve for Highway diversion that runs east through our site and others. The necessity for the diversion, being salinity problems no longer exist, it creates problems for all impacted landowners and all would prefer it to be removed.</p>	
	<p>The biodiversity and cultural &amp; indigenous heritage maps have been amended to reflect the current state of the land.</p> <p>Highway diversion road reserve – The diversion commences on the subject land and traverses through numerous properties until it re-intersects with the Sturt Highway at Paringi. The diversion is land owned by Transport for NSW and therefore any affected landowners should raise their issues directly with TfNSW.</p>	

	<p>We request that the 10,000 ha minimum lot size mapping be removed as per the Planning Proposal as it is inappropriate when all land to the east has a MLS of around 4,000 sqm.</p>	<p>The recommendation to change the minimum lot size applied to the lots north of the study area was informed by the rural residential pattern already emerging in the area. A similar situation has not been observed on the Northbank land. It is also noted that the minimum lot size applied to Northbank will change if the current planning proposal for the land is given the approval to proceed.</p>
	<p>The proposal for a second bridge across the Murray River is supported. The location of a second bridge should be between Gol Gol and the Trentham Cliffs highway service centre as this location will benefit residents to access Mildura and divert truck traffic away from Buronga and Gol Gol.</p>	<p>Noted.</p>
<p>Submission 7 Environmental Protection Authority (DOC/20/11854)</p>	<p>Buffer Zones - creating buffer zones is a very important component of the planning process. EPA considers that suitable separation distances</p>	<p>The structure plan proposes adequate buffers at the interfaces of residential, industrial and agricultural land uses in the area. The structure plan also includes</p>

	<p>should be established at the planning stage between sensitive land uses and industry.</p> <p>Agricultural/Industrial Industries</p> <ul style="list-style-type: none"> <li>- the rezoning of land from rural to more sensitive land uses should consider the impacts and distance between the proposed rezoning and any existing or proposed agricultural industries and other activities. Noise, dust and odours are difficult to control after the event. Noise Matters - Inadequate noise control measures and buffer zones often result in offensive noise being generated and affecting the amenity of residents. Industries likely to generate high noise levels should be located a suitable distance from noise sensitive land uses. Air Matters - Odour impacts on residential and other sensitive land areas stems mostly from inappropriate land use decisions. Once land is developed the range of odour control measures that are available is restricted. Planning and proper site selection are the most important criteria in</li> </ul>	<p>interventions for minimising noise impacts from highways on the amenity of Buronga Gol Gol residents.</p>
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	<p>addressing potential odour impacts from intensive agricultural industries.</p> <p>Domestic sewage - The EPA supports the intention to service the area covered in the structure plan. Council should ensure there is adequate capacity to handle the increase in wastewater.</p>	<p>The existing sewerage headwork has adequate capacity to support the anticipated development of the area during the term of this structure plan. Specific future upgrade requirements can be more adequately assessed as part of the preparation of the Integrated Sewerage Masterplan recommended by this structure plan.</p>
<p>Submission 8 NSW Crown Lands (DOC/20/11829)</p>	<p>Any additional redevelopment work proposed to be undertaken on recreational and reserve land may require departmental consent, licences and/or land acquisition. Continued consultation between the department and Wentworth Shire Council shall continue in relation to any future changes proposed under the Structure Plan.</p>	<p>Council will continue to consult with Crown Lands and obtain the required consents at the design and implementation stage of all proposed works on crown land.</p>
<p>Submission 9 Owner of Lot 138 DP 756946 (DOC/20/12025)</p>	<p>Objection to the proposal to rezone Gol Gol North area from RU1 Primary Production zone to</p>	<p>The E4 Environmental Living zone proposed for the area will reflect the current pattern of land uses occurring in the area. The</p>

	<p>E4 Environmental Living zone and reduce minimum lot size.</p> <p>There is no provision in the plan for future commercial development in the Gol Gol township should an existing business wish to expand or relocate.</p>	<p>planning proposal that would be prepared to rezone the area will be used to determine a suitable minimum lot size that ensures optimum use of properties in the area in consultation with the property owners. Property owners are under no obligation to subdivide their land following the change of zone or minimum lot size applied to the area.</p> <p>Section 5.2.2 recommends 15 hectares of land in the Midway area to be rezoned to B2 Local Centre which will accommodate future commercial development in the BGG area. This location is considered ideal to create a centralised commercial precinct to provide commercial services to both towns. Should any existing business outside the proposed B2 zone wish to expand, there would be no prohibition under the RU5 Village zone to permit the expansion.</p>
Submission 10 Biodiversity and Conservation	An extensive submission from the Biodiversity and Conservation Division of DPIE. The submission provided detailed advice on	Council will consider the advice provided by the Division in all future strategic planning and development assessments.

Division of DPIE (DOC/20/12043)	Aboriginal cultural heritage, biodiversity, native vegetation clearing where development or activity is permitted with and without consent, natural hazards relating to flooding and climate change.	The heritage map has been updated to reflect comments and advice provided in this submission.  Applicable planning principles and recommendations of the Plan have been revised to address issues raised in the submission.
Submission 11 Owner of Lot 141 DP 756946 (DOC/20/12071)	Objection to rezoning of Gol Gol North from RU1 Primary Production to E4 Environmental Living.	The E4 Environmental Living zone proposed for the area will more accurately reflect the current pattern of land uses occurring in the area. There will be no prohibition for existing uses to continue.
Submission 12 Owner of Lot 151 DP 756946 (DOC/20/12063)	Objects rezoning of Gol Gol North from RU1 Primary Production to E4 Environmental due to potential impact on farming activities.	Agricultural activities such as Extensive agriculture and Intensive plant agriculture are permissible without consent in the E4 Environmental Living zone under the Wentworth LEP 2011 and this will continue to apply to the Gol Gol North area. No new restrictions on agricultural activities would be introduced as a result of the rezoning. It should also be noted that all existing uses will be permitted under existing use rights.
Submission 13	Support proposal to rezone Gol Gol North. Would prefer to have	Noted. Feasibility of extending water and sewerage services to

Owner of Lot 134 DP 756946 (DOC/20/10834)	water and sewerage services in the area.	the area can be more adequately assessed as part of the preparation of the Integrated Water Management Plan recommended by this structure plan.
Submission 14 Owner of Lot 4 DP 1093795 (DOC/20/12074)	<p>Incorrect mapping of Lot 4 DP1093795. This land is dedicated for residential purposes as a continuation of our subdivision.</p> <p>Proposed site for second oval is low-lying and subject to flooding. A more suitable use would be as a water reserve or wetlands.</p>	<p>The mapping has been amended to show the northern part of Lot 4 DP1093795 to be rezoned to RU5 Village to allow extension of the subdivision along Carramar Drive. Maps have been amended to reflect the subdivision approval and intended use of the site.</p> <p>Council will continue to investigate the suitability of the site for recreational purposes and will consult with the affected landowners prior to any future decisions being settled. Therefore, for the purposes of initiating investigation and consultation for a second oval and recreation precinct, Figures 5.14 &amp; 6.1 continue to reflect this use.</p>
Submission 15 Owner of Lots 57 & 73 DP 756946 (DOC/20/12098)	A long time Gol Gol resident provided an extensive submission which was largely in support of the structure plan. Comments that required further consideration include:	The comments and suggestions provided by the submitter have been considered and incorporated into the plan.

	<p>Include the proximity of the three state Electricity Interconnector Junction proposed. It is a \$1.5 billion project between Robertstown SA, Broken Hill NSW, Wagga Wagga NSW, Red Cliffs –Kerang Vic.</p>	<p>The Plan has been updated to highlight the proximity of the electricity interconnector to the study area and its potential impact on the area.</p>
	<p>Industrial lot sizes must be variable to suit a range of business requirement</p>	<p>The Plan does not seek to change the MLS applied to the industrial area, however, there is support for subdivision of lots in the industrial estate to cater for a range of industrial businesses and uses.</p>
	<p>I believe a study by RTA (late 90-early 2000) determined that the most practical cost-effective siting to link NSW to Victoria was a position east of Monak. It is the narrowest high bank to high bank point that would connect the Sturt Highway NSW to the Sturt Highway Vic. The route connects via Kulkine Way, Werrimull Road, Meridian Road</p>	<p>The BGGSP proposes a location for a second bridge Murray River in east Gol Gol. This indicative location has been determined in consultation with TfNSW. Council will continue to consult with TfNSW and relevant state authorities to advocate for a second river crossing.</p>
	<p>No reference to the Sturt Highway Gol Gol Creek Crossing &amp;</p>	<p>The Gol Gol Creek infrastructure and location of the radial arm and</p>

	<p>associated infrastructure. This is absolutely critical to the proposed development on both the East &amp; West sides of Gol Gol Creek.</p>	<p>two other regulators have been shown in 2.23. Also, a recommendation for Council to explore alternatives crossings over Gol Gol Creek is included in Section 4.3.4</p>
	<p>Concerns over the water use statistics being above the national average. I believe it should be a regulation that all Large Lot Residential lots have a 22,500-litre holding tank for garden use, filled at the specified 0.9 l/m that can then be pressurised by pump. Current Raw water supply/pressure will struggle on high demand (volume) periods in large lot residential subdivisions.</p>	<p>BGGSP includes a recommendation for Council to encourage onsite water capture and usage in the large lot residential areas. This can be considered in more detail as part of the preparation of integrated water management plan recommended by Plan.</p>
	<p>Installation of sewer in Large Lot Residential (low density) could be expensive for developers.</p>	<p>The long-term benefits of providing sewerage services to lots and the environment have been determined to far outweigh the initial cost. Council's sewerage headworks have high excess capacity to support the extension and it will be facilitated by ongoing works to extend services to Trentham Cliffs.</p>

	Investigation of the potential to increase the 3 x pipes inlet size and deepen the existing retention basin on Moontongue Drive.	This is appropriately considered as part of the upgrade work to the basin recommended by Buronga Gol Gol Structure Plan.
Submission 16 Murray-Darling Basin Authority (DOC/20/12188)	In considering this Plan, it is the role of the Murray-Darling Basin Authority (MDBA) to ensure the water quality of the River Murray is maintained or improved, contributing to the protection of the riverine and floodplain environment. Additionally, we ensure there is no impact on the flow carrying capacity of the River Murray. Comments provided by MDBA were largely in support of the Plan. Comments that required some attention include: Page 28 - Remnant floodplain areas are supported by the MDBA and should be considered for suitable rezoning to avoid ongoing encroachment of development in these areas. Zoning along waterways, however, should be for the protection of waterways values, for public access and for enjoyment of these areas, along with protection of cultural and riparian values. The E4	From the suite of land use zones in the standard instrument, the E4 Environmental Living is considered the most appropriate zone for promoting low-density development in areas with special environmental or scenic values. Therefore, the proposed E4 Environmental Living zone in West Buronga is not expected to have any significant adverse effect on the floodplain of the Murray River but rather formalise the existing rural residential development in the area and recognise the existing biodiversity values of the surrounding natural environment.

	<p>Environmental Living zone should be considered only for areas located further back from the River Murray.</p> <p>Page 29 - The flood-affected land mapping (Figure 2.23) needs to be extended to ensure that impacts of flooding in the development area known as Northbank on the Murray is fully understood.</p> <p>Page 39 - The first site development and design principle under Water Sensitive Urban design should be amended to also include 'protection of water quality in receiving waterways'.</p>	<p>Northbank is outside the coverage area of Council's current flood mapping and flood data. A site-specific flood risk assessment would have to be undertaken as part of any future development of the land.</p> <p>This principle has been amended accordingly</p>
<p>Submission 17</p> <p>James Golsworthy on behalf of owners of Lot 120-121</p> <p>DP 756946 and Lot 2 DP 1236706 (DOC/20/12367)</p>	<p>The Buronga Gol Gol Structure Plan has been prepared to provide a clear long-term vision for the growth of the study area. Council should be commended on taking such an approach to the locality and the vision which is being established for the study area. The Plan identifies part of the land for Zone SP2</p>	<p>The land has been retained as RU5 Village zoned land as requested by the owner. Should an alternative site be required, a suitable location for this use will be determined in consultation with NSW Department of Education.</p>

	<p>Infrastructure. The land has been identified as suitable for future educational purposes. We object to the land being identified for such purposes and request it remain as being included in Zone RU5. Urban development is being undertaken in Dawn Avenue south east of the land and in Pitman Avenue west of the land. It is therefore reasonably expected that reticulated services which would enable subdivision of the land, are available or if not available will be in a short time.</p>	
<p>Submission 18 Transport for NSW (DOC/20/15375&amp; DOC/20/16306)</p>	<p>Council received an extensive submission from Transport for NSW that mainly focused on the interaction of proposed development and traffic/road treatments the highways and the potential for impacts on the efficiency and safety of the classified road network.</p>	<p>Recommendations relating to intersection treatments have been revised to highlight the need for further investigation and consultations prior to their implementation. Council will also consider the advice provided by the TfNSW in all future strategic planning and development assessments.</p>
<p>Submission 19 Owner of Lot 2 DP1075225</p>	<p>This submission was verbal and made via a meeting with executive staff. The request made was for consideration and</p>	<p>At this stage, the lot pertaining to the submission has not been individually identified for a specific purpose or development.</p>

	<p>discussion of future development opportunities for the site to be included as part of the BGGSP.</p>	<p>However, the area to the north of Pitman Avenue will eventually be required for future urban development. The first review of the Structure Plan, ideally to be conducted within the next 2 or 3 years, will further consider the future of this area and in particular, the subject parcel of land.</p>
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### Attachment 3: Significant development and planning proposals in Buronga Gol Gol

Development application/ planning proposals	Description
Northbank on Murray Planning Proposal	This comprehensive planning proposal in East Gol Gol (lot 1 DP 1182353) is more or less an exclusive resort-style development which proposes to provide for a large amount of extra residential and commercial development alongside greater provision of public amenity and infrastructure. The development encompasses a land area of around 679ha, which spans across both sides of the Sturt Highway to the east of Gol Gol and extends right down to the banks of the Murray River. This planning proposal is currently under consideration for Gateway Determination by the Department of Planning, Industry and Environment.
Jewel Markets Planning Proposal	This planning proposal seeks to develop an enclosed Queen Victoria Market-style bazaar which showcases and offers (for sale) a large selection of the region's produce and products on a strip of land opposite the Midway Area on the Sturt Highway (Lot 1 DP 1216096). Offerings in the market will include local fruits vegetables, meat, crafts, wines, juices and jams among others. A Gateway Determination has been granted for this planning proposal.
Supermarket development application	A new supermarket is proposed on Lot 1 DP 1213735 in the Midway Area. This new supermarket proposal will enable residents of Buronga Gol Gol to have direct access to retail service locally within a walking and cycling distance. This means that residents will no longer have to drive Mildura for basic grocery shopping. Construction of the supermarket has commenced.
Commercial premises development application	This development application proposes eight (8) commercial premises at 65-77 Hendy Road in Buronga. The commercial premises will be utilised for a range of commercial purposes on completion. Construction of the buildings has commenced.
Residential subdivision development applications	There are about 20 proposed residential subdivision across the Buronga Gol Gol area. The proposed residential subdivisions are at various stages with construction commenced for some while others are awaiting development approval. These proposed residential subdivisions are expected to create approximately 500 residential lots when fully developed.