

# WIMMERA SOUTHERN MALLEE:

*Socio-Economic Value  
of Recreational and  
Environmental Water  
2019*



Wimmera Development Association

The Wimmera Southern Mallee  
Socio-Economic Value of Recreational and  
Environmental Water report has been made  
possible by the following project partners



## TABLE OF CONTENTS

	<b>EXECUTIVE SUMMARY</b> .....	Page 4
<b>1.</b>	<b>INTRODUCTION</b> .....	Page 9
	1.1 Acknowledgements .....	Page 9
	1.2 Scope .....	Page 9
	1.3 Adjustments to the Assessment in 2018-19 .....	Page 11
<b>2.</b>	<b>WIMMERA SOUTHERN MALLEE REGION RESULTS</b> .....	Page 12
	2.1 Demographic and Location Characteristics of Interviewees .....	Page 12
	2.2 Economic Contribution .....	Page 17
	2.3 Health and Community Contribution .....	Page 21
<b>3.</b>	<b>RECREATIONAL WATER FACILITIES IN BULOKE SHIRE</b> .....	Page 22
	3.1 Overview .....	Page 22
	3.2 Selected Recreational Water Facilities .....	Page 23
	3.3 Economic Contribution .....	Page 29
<b>4.</b>	<b>RECREATIONAL WATER FACILITIES IN HINDMARSH SHIRE</b> .....	Page 32
	4.1 Overview .....	Page 32
	4.2 Selected Recreational Water Facilities .....	Page 33
	4.3 Economic Contribution .....	Page 37
<b>5.</b>	<b>RECREATIONAL WATER FACILITIES IN HORSHAM RURAL CITY</b> .....	Page 40
	5.1 Overview .....	Page 40
	5.2 Selected Recreational Water Facilities .....	Page 42
	5.3 Economic Contribution .....	Page 46
<b>6.</b>	<b>RECREATIONAL WATER FACILITIES IN NORTHERN GRAMPIANS SHIRE</b> .....	Page 49
	6.1 Overview .....	Page 49
	6.2 Selected Recreational Water Facilities .....	Page 51
	6.3 Economic Contribution .....	Page 57
<b>7.</b>	<b>RECREATIONAL WATER FACILITIES IN WEST WIMMERA SHIRE</b> .....	Page 60
	7.1 Overview .....	Page 60
	7.2 Selected Recreational Water Facilities .....	Page 62
	7.3 Economic Contribution .....	Page 67
<b>8.</b>	<b>RECREATIONAL WATER FACILITIES IN YARRIAMBICK SHIRE</b> .....	Page 70
	8.1 Overview .....	Page 70
	8.2 Selected Recreational Water Facilities .....	Page 71
	8.3 Economic Contribution .....	Page 75
<b>9.</b>	<b>ROCKLANDS RESERVOIR</b> .....	Page 79
	8.1 Overview of the Recreational Water Facility .....	Page 79
	8.2 Economic Contribution .....	Page 81
<b>10.</b>	<b>COMMUNITY AND SOCIAL EFFECTS</b> .....	Page 84
	10.1 Community Impacts .....	Page 84
	10.2 Health and Lifestyle .....	Page 87

## EXECUTIVE SUMMARY

### E1 Background

This project has been a joint initiative of Wimmera Development Association, GWMWater, the Wimmera Catchment Management Authority, and Local Councils. It is the third annual assessment of the economic and social contribution made by the local weirs, lakes and rivers to the regional economy. The project encompassed assessments of 27 lakes, weir pools and rivers around the region.

### E2 Recreational Water Facility Visitation and Usage

- Estimated recreational water users in 2018-19 at the selected facilities are:
 

- Overnight visitors:	76,680
- Visit nights:	296,655
- Local active participation (people using the water facility as a day trip destination for fishing, swimming, boating, picnicking on the banks):	84,886
- Local passive participation (people engaged in an activity using the foreshore or trails around the water facility due to its amenity, such as walking, cycling, jogging):	166,622
- Total recreational water participation:	328,187
- Change on 2017-18 <sup>1</sup> :	8.42%
- Estimated number of people involved:	93,225
- Activities and amenity provided at the WSM water facilities are clearly suited to residents and visitors 'for a lifetime', with good levels of participation across all age ranges. Family groups and retirees dominate the overnight visitor users. Older participants, including 'grey nomad' style overnight visitors were most prevalent at the water facilities in Yarriambiack and Hindmarsh Shires.
- A large majority of visitors to the recreational water facilities are residents of the Wimmera Southern Mallee and other parts of regional Victoria.
- Most towns servicing the WSM recreational water facilities have high levels of socio-economic disadvantage. In fact, most are within the most disadvantaged 30% of all 'suburbs' in Victoria (of 2,676 suburbs in total)<sup>2</sup>. This suggests the local towns and their residents are likely to achieve greater than average benefits from the economic and social benefits accruing from the regional recreational water facilities.

### E3 Economic Contribution

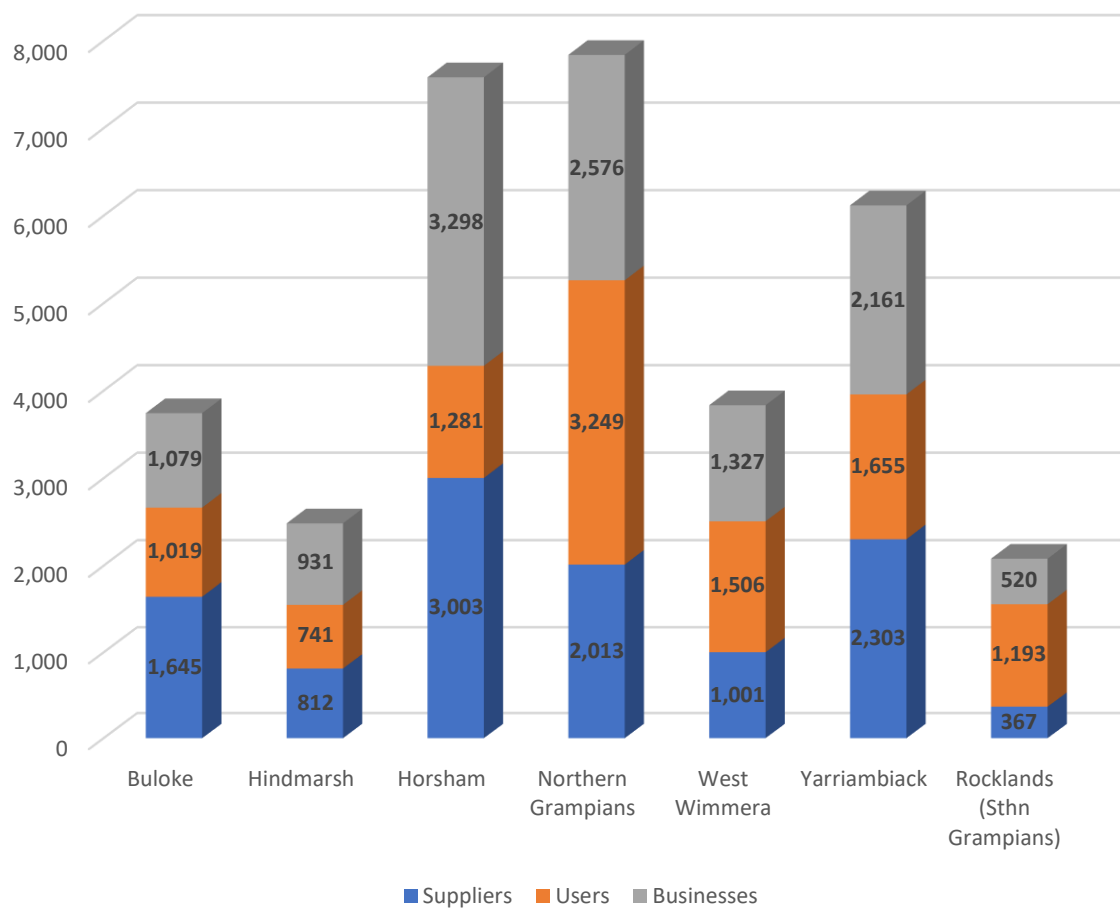
- The total estimated regional economic contribution from the 27 selected recreational water facilities in the Wimmera Southern Mallee is \$33.683 million in 2018-19 (an 11.61% increase on the contribution measured in 2017-18), or a 4.72% increase if Rocklands Reservoir is excluded.

<sup>1</sup> The change on 2017-18 is a combination of growth in participation and a change in the recreational water sites evaluated (Lake Bringalbert, Green Lake at Sea Lake and Rocklands Reservoir were added in 2018-19, while Lake Natimuk had been included in 2017-18 and was excluded in 2018-19)

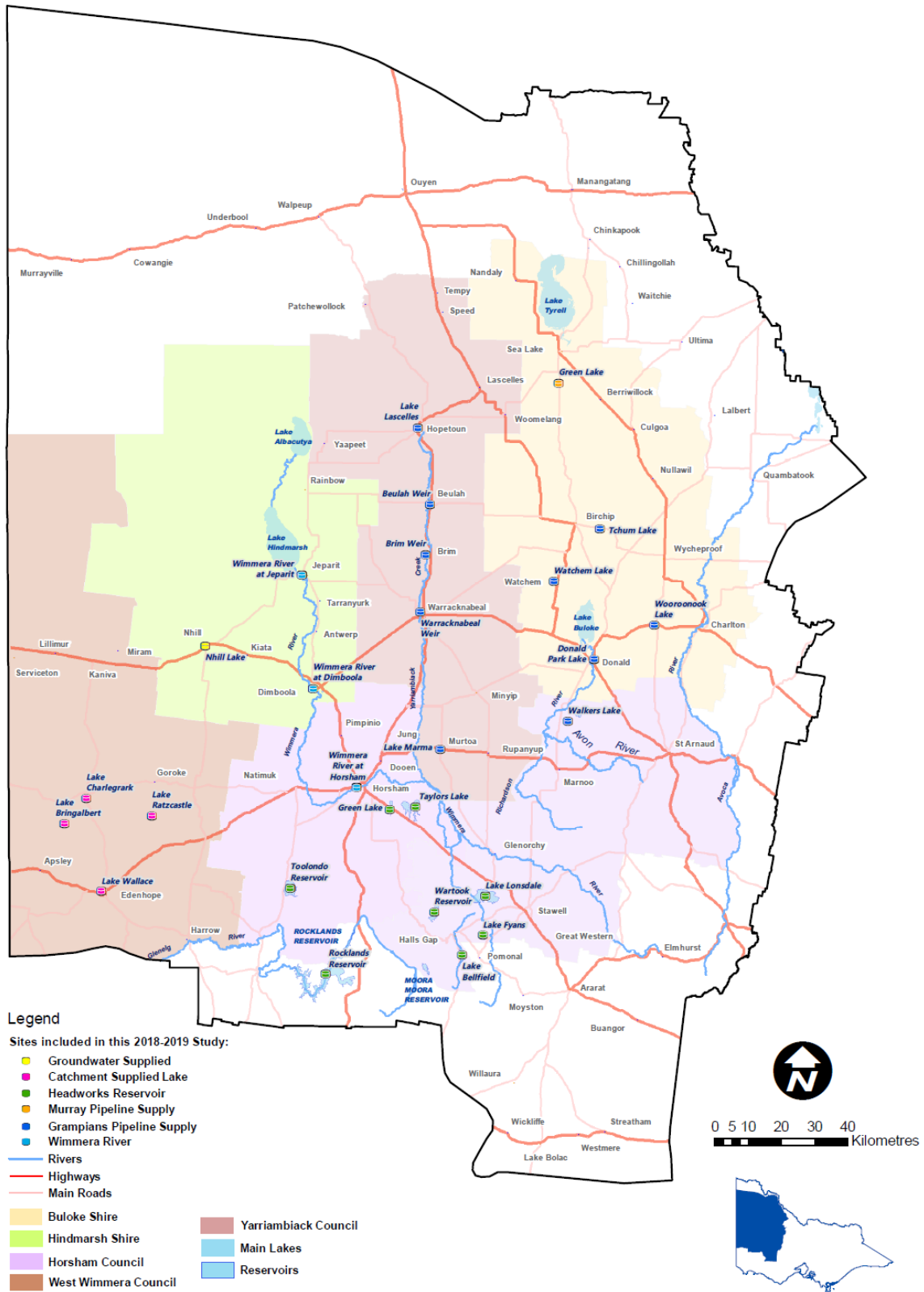
<sup>2</sup> Australian Bureau of Statistics' SEIFA indices calculate relative advantage and disadvantage using a range of variables on income, education, employment, occupation, housing, and other miscellaneous indicators.

- Estimated regional economic contributions of the water facilities generated by respective local areas is:
  - Buloke Shire: \$3.744 million
  - Hindmarsh Shire: \$2.484 million
  - Horsham Rural City: \$7.583 million
  - Northern Grampians Shire: \$7.839 million
  - West Wimmera Shire: \$3.834 million
  - Yarriambiack Shire: \$6.119 million
  - Southern Grampians Shire: \$2.080 million
  - Total: \$33.683 million.

**Figure E1 Estimated Regional Recreational Water Economic Contribution by Local Areas, 2018-19: (\$'000)**

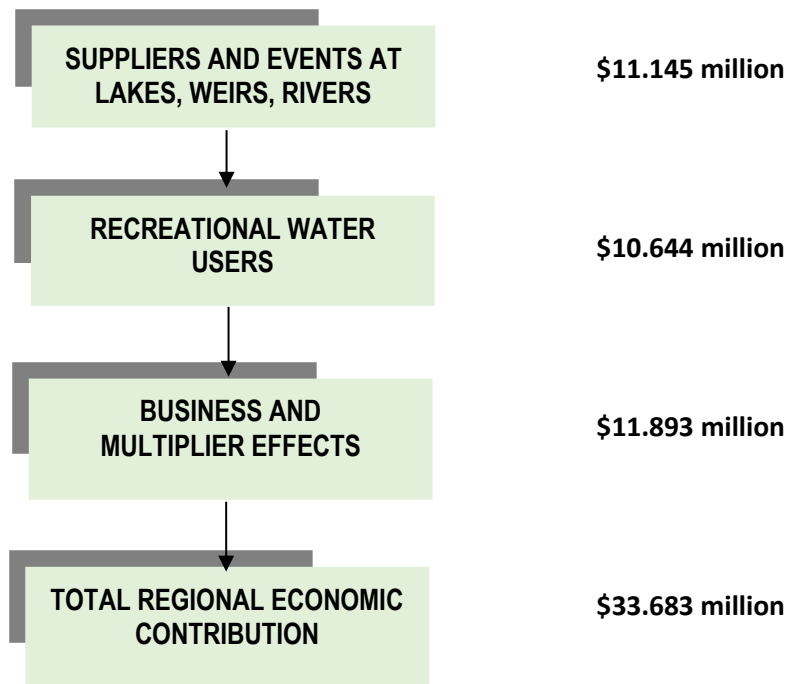


# Wimmera Southern Mallee Socio – Economic Value of Recreational Water



A larger map is located at the centre of this report.

**Figure E2 2018-19 Estimated Recreational Water Economic Contribution: WSM Region**



**E4 Community and Social Contribution**

- The value of WSM recreational water users’ health contribution has been estimated based on the prevention of chronic diseases (such as breast cancer, coronary heart disease, diabetes, bowel cancer and stroke). The mental health benefits are derived from the prevention of anxiety and depression.
- The estimated total health benefits from WSM residents and all country Victorians participating at WSM recreational water facilities in 2018-19 include:

	WSM Resident Participants	Country Victorian Participants
- Physical: Annual benefit:	\$1,392,784	\$3,310,023
- Mental benefit:	\$ 164,142	\$ 397,917
- Total annual health benefit	\$1,556,926	\$3,708,007
- 2017-18:	\$1,672,159	\$3,805,678

- WSM communities which have recreational water facilities are rated highly for lifestyle, community spirit and inclusiveness by residents. On a scale of 1 to 7, where 7 implies 'totally agree', WSM average ratings for lifestyle and community factors, were:
- My community is a great place to live: 6.5
  - The community copes well when faced with challenges: 6.2
  - I feel proud to live in the community: 6.5
  - The community has a bright future: 5.6
  - There is good community spirit: 6.4
  - Local groups and organisations are good at getting things done: 6.3
  - Some individuals get left out of the community: 2.6
  - There is a lot of disagreement between people in the community: 1.8
  - I attend community events such as farmers' markets, festivals and shows: 4.4
  - I take part in community-based organisations (eg Rotary, Lions, CWA): 4.2
  - I take part in sports groups or teams: 4.6
  - I feel part of my community: 6.3
  - Local businesses in my town are doing well at the moment: 5.0
- WSM recreational water users who are also local residents, are generally satisfied with their health and wellbeing. The following average satisfaction ratings (scored out of 10) were recorded in 2018-19.
- Your health: 8.6
  - Your standard of living: 8.7
  - What you are currently achieving in life 8.7
  - Your relationships with friends and family 9.2
  - How safe you feel 9.3
  - Feeling part of your community 9.2
  - Your future security 8.6.



## 1. INTRODUCTION

### 1.1 ACKNOWLEDGEMENTS

This project was undertaken during November 2018 to July 2019 by Street Ryan under direction from a Steering Group comprising:

- Mark Fletcher, Acting Executive Director, WDA
- Tony Baker, Statutory and Strategy Manager, Wimmera CMA
- Bernie Dunn, Co-ordinator Water Resources and Recreation Strategy, GWMWater
- James Goldsmith, Southern Mallee Lakes Alliance
- Jeff Woodward, Wimmera Mallee Tourism.

This group provided advice, direction and support in collection of data from Wimmera Southern Mallee businesses, recreational water facility committees of management, and recreational water users. Their input and contribution is gratefully acknowledged.

Street Ryan was also supported by Sport Business Partners in the estimation of health benefits for the recreational water facilities.



### 1.2 SCOPE

This project was a joint initiative of Wimmera Development Association, Wimmera Catchment Management Authority, GWMWater and Local Councils. It has been designed to assess the economic and social contribution made by the water at local weirs, lakes and rivers to the regional economy and local communities. This assessment is the third in a planned four-year longitudinal annual study. The project is intended to support development of facilities and government grant applications as well as planning for future water allocations. It also hopes to demonstrate to the community and government the value of environmental and recreational water.

The project encompassed assessments of 27 lakes, weir pools and rivers around the region and measured contributions in the 'recreational water supply chain' at three levels:

- Level 1: Service providers (supplying products and services to the lakes/weirs) including water, camping/caravanning, maintenance, construction, management, research and catering.
- Level 2: Users of the Recreational Water Lakes/Weir Pools including residents, community groups and visitors.
- Level 3: Local businesses (servicing the users of the lakes/weirs) including accommodation, food services, health, sport and recreation, transport, retail and personal services.

The 2018-19 assessment process involved:

- Level 1: Supplier Organisations
  - Person to person and telephone interviews with 34 Wimmera Southern Mallee recreational water facility supplier organisations.
- Level 2: Recreational Water Users
  - Person to person interviews with 3,554 recreational water facility users (overnight, active and passive day visitors)
- Level 3: Local Businesses
  - Person to person interviews with 8 businesses in towns servicing recreational water facilities (adding to supply chain details of those completed in 2016-17 and 2017-18).

The 27 lakes, weir pools and rivers in 2018-19 were:

- Buloke Shire
  - Tchum Lake
  - Lake Watchem
  - Wooroonook Lake
  - Donald Caravan Park Lake (Folletti Lake)
  - Green Lake, Sea Lake
- Horsham Rural City
  - Wimmera River at Horsham
  - Taylors Lake
  - Green Lake
  - Lake Toolondo
- Hindmarsh Shire
  - Wimmera River at Dimboola
  - Wimmera River at Jeparit
  - Nhill Lake
- Northern Grampians Shire
  - Walkers Lake
  - Lake Fyans
  - Lake Bellfield
  - Lake Wartook
  - Lake Lonsdale.
- West Wimmera Shire
  - Lake Charlegrark
  - Lake Wallace
  - Lake Ratzcastle
  - Lake Bringalbert
- Yarriambiack Shire
  - Beulah weir pool
  - Brim weir pool
  - Warracknabeal weir pool
  - Lake Lascelles
  - Lake Marma
- Southern Grampians Shire
  - Rocklands Reservoir.

Person to person interviews were conducted during November 2018 to April 2019. Although respondents were asked to comment on their usage of recreational facilities, and business impacts, over the entire 2018-19 year, the nature of the individuals and groups may be affected by the months in which interviews were conducted.

Busy school holiday periods, public holidays and major events, were explicitly included in the interview processes, and the types of visitation during other seasons is likely to be somewhat different. However, bias associated with a restricted interview period has been addressed in discussions with service providers at the recreational water facilities and with committees of management.

### 1.3 ADJUSTMENTS TO THE ASSESSMENT IN 2018-19

There were no changes to the recreational water assessment approach in 2018-19. However, there were some variations in the recreational water bodies included, and to the assessment period:

- 27 Lakes and weir pools were included: 24 were unchanged from 2017-18, but Lake Natimuk (with no water in either 2017-18 or 2018-19) was excluded. Lake Bringalbert, Green Lake at Sea Lake (where restoration work was completed and the lake was supplied with Wimmera Mallee Pipeline water during the 2018-19 year), and Rocklands Reservoir were added for the 2018-19 assessment. Rocklands Reservoir is a facility with dispersed recreational access sites, so interviews were conducted at 6 locations:
  - Glendinning
  - Rocklands Weir Wall (around to the main boat ramp and Turkey Neck camping area)
  - Brodies
  - Mountain Dam
  - Hynes
  - Fergusons.
- Interviews with lake, river and weir users were undertaken over a longer period of time (November to April). This was one month longer than the previous year. The longer elapsed timescale is believed to better reflect the socio-demographic mix of total annual participation, although it is likely that older retired couples ('grey nomads') are still under-reported (as a percentage of total users), since committees of management believe this cohort is more prevalent for overnight visitations during the quieter and cooler winter months (June to August). Activities that are strongly represented in the interview sample during November to April such as swimming and water skiing, also give way to greater proportional participation in non-water immersion activities (such as fishing, canoeing, and picnicking) in the cooler months.

## 2. WIMMERA SOUTHERN MALLEE REGION RESULTS

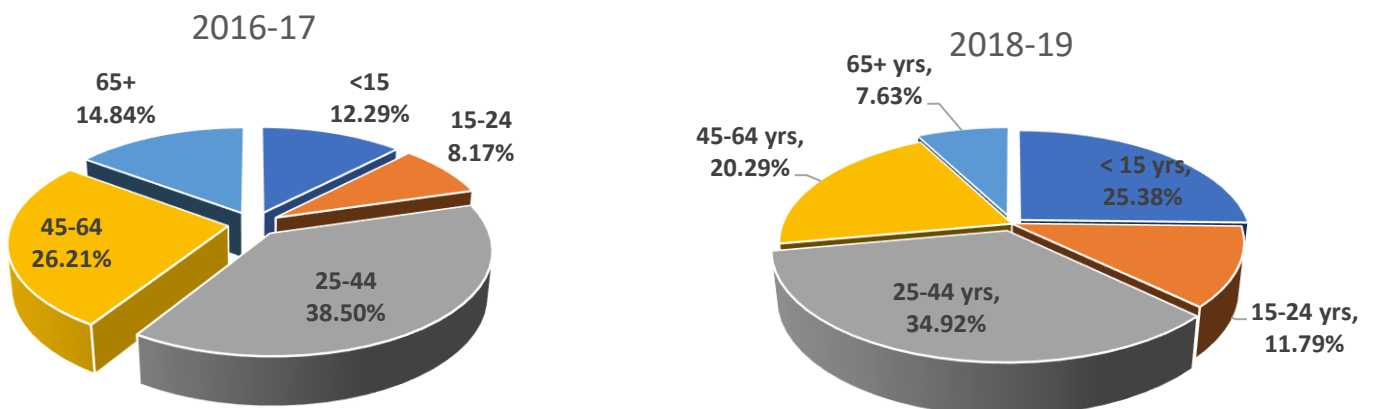
### 2.1 DEMOGRAPHIC AND LOCATION CHARACTERISTICS OF INTERVIEWEES

Features of WSM recreational water users in 2018-19 were:

- Almost equal male (50.2%) and female (49.3%) residents and visitors (compared with 51.7% males and 48.3% females in 2017-18).
- Activities 'for a lifetime', with good levels of participation across all age ranges, as shown in Figure 2.1. In 2018-19 there was a further increase in younger water users (in the less than 15 years and 15-24 years age groups) reflecting the extended public and school holiday periods during December-January and Easter.
- A major source of recreational activities for country Victorians, with the large majority of participation from non-metropolitan Victoria, and overwhelmingly from inland cities and towns in regional Victoria.

Families, retired couples, and friendship groups are the most frequent users of the recreational water facilities, with the 25 to 44 years age cohort being the largest, and less than 15 years the second largest, as shown in Figure 2.1 and Table 2.1. The age profile of recreational water users was notably older in Hindmarsh and Yarriambiack Shires in 2018-19, and youngest in Northern Grampians Shire.

**Figure 2.1 Age Structure of WSM Recreational Water Users**



**Table 2.1 Recreational Water Users by Age and Local Government Area**

	<15 years	15-24 years	25-44 years	45-64 years	65+ years	Total Sample
Buloke Shire	28.94%	11.22%	34.06%	18.11%	7.68%	508
Hindmarsh Shire	27.42%	12.71%	26.42%	23.08%	10.37%	299
Horsham Rural City	16.56%	11.18%	37.89%	26.71%	7.66%	483
Northern Grampians Shire	22.96%	16.93%	38.91%	17.32%	3.89%	514
West Wimmera Shire	30.82%	13.07%	35.37%	16.90%	3.84%	704
Yarriambiack Shire	19.77%	9.09%	31.14%	23.86%	16.14%	440
Southern Grampians Shire (Rocklands)	28.22%	8.42%	36.30%	19.47%	7.59%	606
<b>Total</b>	<b>25.38%</b>	<b>11.79%</b>	<b>34.92%</b>	<b>20.29%</b>	<b>7.63%</b>	<b>3,554</b>

There was almost a gender balance in users of Wimmera Southern Mallee recreational water facilities. The gender split, of recreational water users interviewed in 2018-19 was 50.2% male and 49.8% female. Male users were in the majority at 12 of the waterbodies:

**Buloke Shire**

- Tchum Lake (55.1%)
- Green Lake, Sea Lake (50.3%)

**Hindmarsh Shire**

- Nhill Lake (56.9%)

**Horsham Rural City**

- Green Lake (63.6%)
- Lake Toolondo (54.9%)
- Taylors Lake (56.1)

**Northern Grampians Shire**

- Lake Wartook (51.0%)
- Walkers Lake (53.3%)

**West Wimmera Shire**

- Lake Wallace (54.4%)

**Yarriambiack Shire**

- Beulah Weir Pool (52.3%)
- Warracknabeal Weir Pool (59.4%)

**Southern Grampians Shire**

- Rocklands Reservoir (50.7%).

Female users were in the majority at 13 waterbodies:

**Buloke Shire**

- Folletti Park Lake – Donald (51.9%)
- Lake Watchem (50.8%)
- Lake Wooroonook (50.8%)

**Hindmarsh Shire**

- Wimmera River – Jeparit (52.3%)

**Horsham Rural City**

- Wimmera River – Horsham (58.9%)

**Northern Grampians Shire**

- Lake Bellfield (55.7%)
- Lake Lonsdale (56.6%)

**West Wimmera Shire**

- Lake Bringalbert (51.7%)
- Lake Charlegrark (52.4%)
- Lake Ratzcastle (54.0%)

**Yarriambiack Shire**

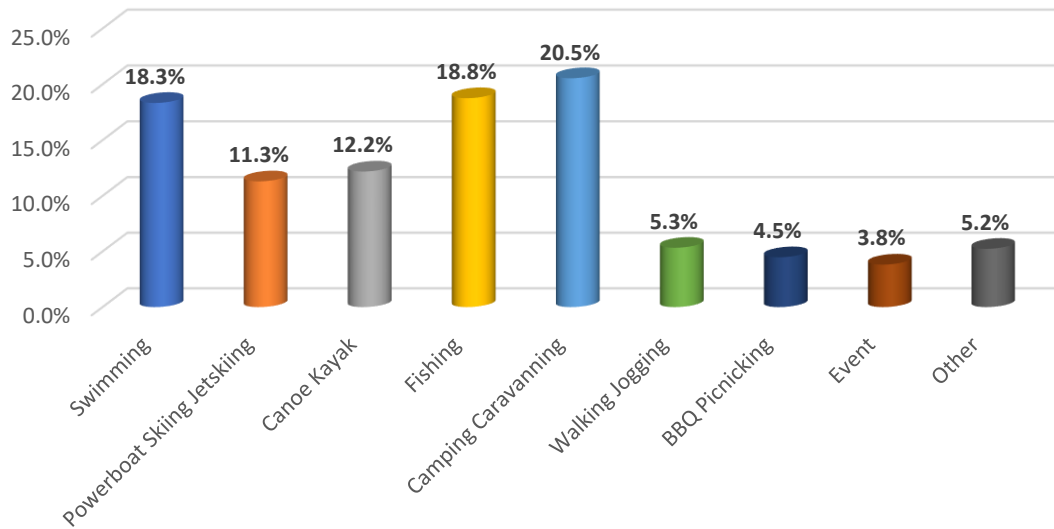
- Brim Weir Pool (53.7%)
- Lake Lascelles (51.0%)
- Lake Marma (54.1%)

Gender equity (50% of each gender) was recorded at Wimmera River – Dimboola and Lake Fyans.

Recreational water activities of fishing, swimming, camping or caravanning on site, barbecuing/picnicking, power boating (including skiing and jet skiing)<sup>3</sup>, and unpowered watercraft, were the most popular recreational uses of the waterways in 2018-19 as shown in Figure 2.2. On average, water users engaged in 3.5 recreational activities during visits.

<sup>3</sup> Power boating is disallowed or restricted at several of the WSM recreational water bodies

**Figure 2.2 Recreational Activities at Lakes and Weirs, 2018-19**



Estimated recreational water users in 2018-19, detailed in Table 2.2, at the selected facilities are:

- Overnight visitors: 76,680 (22.2% more than estimated in 2017-18)
- Visit nights: 296,655 (42.4% more than 2017-18)
- Average length visit - overnight visitors: 4.41 nights (compared with 3.32 in 2017-18)
- Local active participation: 84,885 (10.2% more than 2017-18)
- Local passive participation: 166,622 (2.3% more than 2017-18)
- Total recreational water participation: 328,187 (8.4% more than 2017-18)
- Number of people involved: 93,225 people (21.1% more than 2017-18)
- Number of WSM residents involved: 27,400 people (or 29.4% of total users)
- Number of country Victorian residents: 66,015 people (or 70.8% of total users)

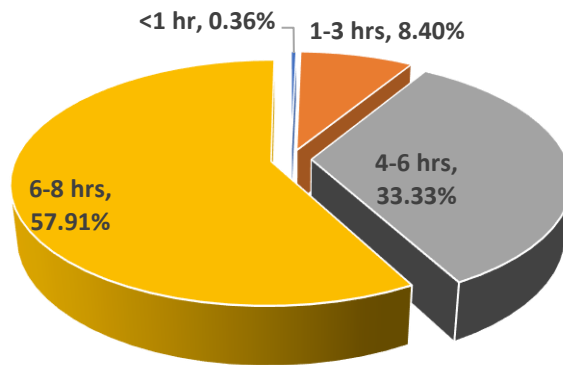
**Table 2.2 Estimated Recreational Water Facility Users, 2018-19**

	Overnight Visitors	Visit Nights	Active Day Participants	Passive Day Participants	Total Water Participants 2018-19
<b>Buloke Shire</b>					
Donald Folletti Park	1,575	5,607	2,320	3,680	7,575
Green Lake, Sea Lake	168	600	1,962	n.a.	2,129
Tchum	1,622	5,450	3,455	1,550	6,627
Watchem	1,193	5,274	1,076	n.a.	2,270
Wooroonook	1,523	6,596	1,105	n.a.	2,628
<b>Total Buloke</b>	<b>6,081</b>	<b>23,526</b>	<b>9,918</b>	<b>5,230</b>	<b>21,229</b>
<b>Hindmarsh Shire</b>					
Wimmera - Dimboola	3,057	13,974	6,970	13,753	23,780
Wimmera - Jeparit	538	1,517	1,414	6,450	8,402
Nhill Lake	472	611	3,991	10,200	14,663
<b>Total Hindmarsh</b>	<b>4,067</b>	<b>16,102</b>	<b>12,374</b>	<b>30,403</b>	<b>46,844</b>
<b>Horsham Rural City</b>					
Wimmera - Horsham	3,625	10,700	14,377	66,564	84,566
Green Lake	110	240	1,000	900	2,010
Taylors Lake	2,608	11,005	1,585	n.a.	4,193
Toolondo	670	2,099	1,050	n.a.	1,720
<b>Total Horsham</b>	<b>21,675</b>	<b>82,116</b>	<b>26,443</b>	<b>67,464</b>	<b>115,582</b>
<b>Northern Grampians</b>					
Bellfield	1,815	7,417	2,650	14,566	19,032
Fyans	22,223	79,336	2,799	3,420	28,442
Lonsdale	173	819	655	3,875	4,703
Walkers	1,256	6,040	1,540	n.a.	2,796
Wartook	287	893	670	1,000	1,957
<b>Total Northern Grampians</b>	<b>25,754</b>	<b>94,506</b>	<b>8,315</b>	<b>22,861</b>	<b>56,930</b>
<b>West Wimmera</b>					
Charlegrark	1,467	7,792	2,400	n.a.	3,867
Ratzcastle	1,537	6,641	1,100	n.a.	2,637
Bringalbert	743	3,046	1,750	n.a.	2,493
Wallace	6,018	25,870	3,435	9,868	19,321
<b>Total West Wimmera</b>	<b>9,765</b>	<b>43,348</b>	<b>8,685</b>	<b>9,868</b>	<b>28,318</b>
<b>Yarriambiack Shire</b>					
Brim Weir Pool	2,245	8,532	5,302	n.a.	7,547
Beulah Weir Pool	1,114	3,825	1,288	n.a.	2,402
Lascelles	1,609	8,712	8,200	5,100	14,909
Marma	1,613	3,711	1,055	9,546	12,214
Warracknabeal Weir Pool	2,756	12,277	3,305	16,150	22,211
<b>Total Yarriambiack Shire</b>	<b>9,338</b>	<b>37,056</b>	<b>19,150</b>	<b>30,796</b>	<b>59,284</b>
<b>Southern Grampians Shire</b>					
Rocklands Reservoir	14,662	58,072	8,431	n.a.	23,093
<b>Total WSM</b>	<b>76,680</b>	<b>296,655</b>	<b>84,885</b>	<b>166,622</b>	<b>328,187</b>
% change on 2017-18 assessment	22.24%	42.42%	10.21%	2.26%	8.42%

Note: There were 25 lakes and weirs in the 2017-18 assessment compared with 27 in 2018-19. Rocklands Reservoir, Lake Bringalbert and Green Lake near Sea Lake were the additional waterbodies (while Lake Natimuk was excluded).

Overnight visitor participants are those who are staying on-site at, or near, the selected waterway/waterbody for recreation. Active day participants are people engaging in a direct water related activity (swimming, fishing, canoeing, skiing, etc). Passive day participants are people engaging in a recreational activity in close proximity to the lake, weir or river due to the amenity and facilities offered at the site (walking or running along a track, picnicking, etc). The duration of daily physical activities is most often 4-6 hours or 6-8 hours, as shown in Figure 2.3.

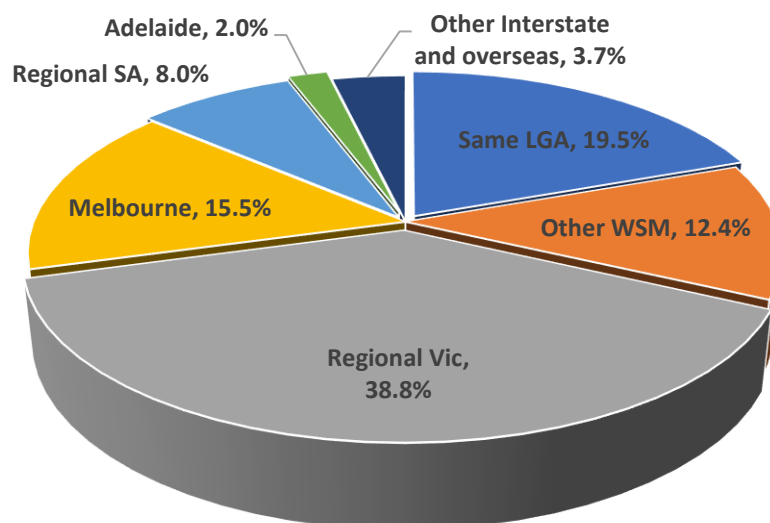
**Figure 2.3 Duration of Daily Physical Activities by WSM Recreational Water Users**



The majority of users and participants at the recreational water facilities continue to be regional Victorians, as shown in Figure 2.4. The distribution of residential locations of day and overnight visitors to the recreational water facilities in 2018-19 was:

- Visitors who live in the same Shire or City as the facility: 19.5%
- Visitors who live in another part of the Wimmera Southern Mallee: 12.4%
- Visitors from other regional (country) Victoria: 38.8%
- Visitors from regional South Australia: 8.0%
- Visitors from Melbourne: 15.5%
- Visitors from Adelaide: 2.0%
- Visitors, other interstate/overseas locations and no fixed address: 3.7%

**Figure 2.4 Residential Location of Recreational Water Visitors**





## 2.2 ECONOMIC CONTRIBUTION

Table 2.3 presents estimates of the economic contribution from the recreational water facilities at the three levels in the supply chain by Local Government Area, revealing:

- Suppliers (including supplier businesses, statutory agencies, community groups and Committees of Management) contributed an estimated \$11.145 million.
- Recreational water users contributed an estimated \$10.644 million to the local areas in which the facilities are located.
- Businesses in the immediate, and nearby, towns and the flow-on effects from this expenditure, contributed an estimated \$11.893 million to the local government areas in the Wimmera Southern Mallee from the recreational water facility users and suppliers.

The 27 assessed recreational water facilities made a total regional economic contribution of \$33.683 million in 2018-19. This comprised:

- Buloke Shire: \$3.744 million
- Hindmarsh Shire: \$2.484 million
- Horsham Rural City: \$7.583 million
- Northern Grampians Shire: \$7.839 million
- West Wimmera Shire: \$3.834 million
- Yarriambiack Shire: \$6.119 million
- Southern Grampians Shire: \$2.080 million
- Total contribution: \$33.683 million.

**Table 2.3 Estimated Economic Contribution by WSM Recreational Water Facilities: Suppliers, Recreational Users and Regional Businesses, 2018-19**

	Suppliers	Water Users	Businesses	Total
Buloke	\$1,645,491	\$1,018,887	\$1,079,446	\$3,743,824
Hindmarsh	\$811,840	\$740,982	\$931,420	\$2,484,242
Horsham	\$3,003,195	\$1,281,316	\$3,298,114	\$7,582,624
Northern Grampians	\$2,013,214	\$3,249,292	\$2,576,230	\$7,838,736
West Wimmera	\$1,001,137	\$1,505,961	\$1,327,209	\$3,834,307
Yarriambiack	\$2,303,344	\$1,654,775	\$2,160,530	\$6,118,649
Southern Grampians (Rocklands)	\$367,000	\$1,192,664	\$520,454	\$2,080,118
<b>Total WSM Region</b>	<b>\$11,145,221</b>	<b>\$10,643,877</b>	<b>\$11,893,402</b>	<b>\$33,682,500</b>

Lake Fyans, in the heart of the Grampians tourism region, was the water facility generating the largest estimated contribution from users, with overnight visitors making the overwhelming majority of this contribution. Rocklands Reservoir had the second greatest contribution from users. Lake Wallace at Edenhope and the Wimmera River at Horsham had the next greatest estimated contribution from users, followed by the Wimmera River at Dimboola, Warracknabeal Weir Pool and Lake Lascelles at Hopetoun. Lake Fyans is in the Grampians National Park tourism precinct and Rocklands Reservoir is Victoria's second largest inland waterway, while all the next five largest economic contribution lakes and weirs are located within the town boundaries of an urban area and are rated among the top local assets by many residents and visitors. The lakes estimated to have the greatest economic contribution from users that are not within a town boundary or urban area (excluding Lake Fyans and Rocklands Reservoir) were Brim Weir Pool, Lake Charlegrark, Taylors Lake, and Tchum Lake.

These estimates are detailed in Table 2.4. Average daily expenditures by overnight and active day visitors (per person per day) are shown in Figures 2.5 and 2.6.

**Table 2.4 Estimated Expenditure by Participants at Recreational Water Facilities 2018-19**

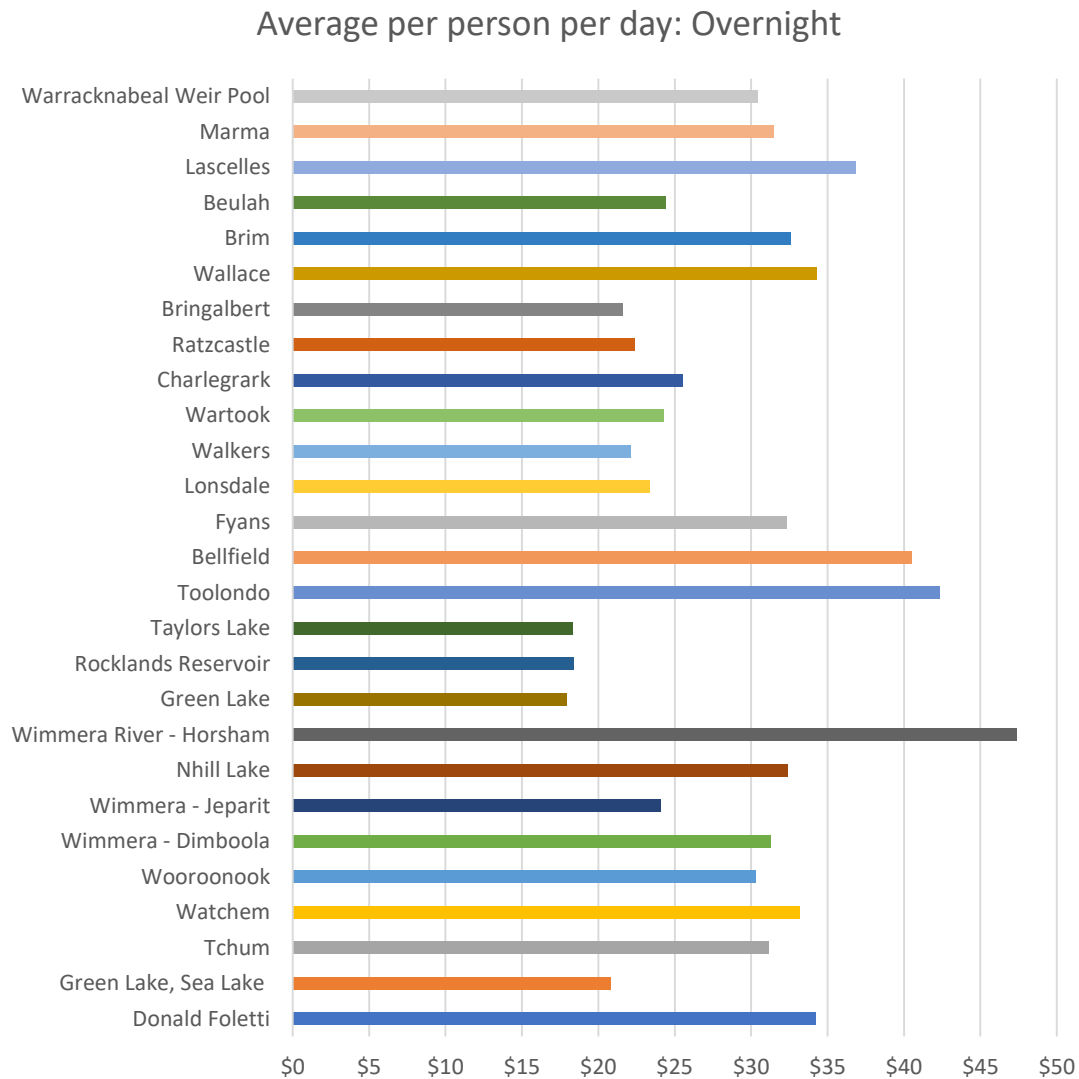
	Expenditure Overnight Visitors	Expenditure Active Day Users	Expenditure Passive Day Users	TOTAL	% Change on Last Year 2017-18
<b>Buloke Shire</b>					
Donald Folletti	\$191,801	\$75,400	\$10,120	\$277,321	43.80%
Green Lake, Sea Lake	\$12,492	\$35,683	n.a.	\$48,175	n.a.
Tchum	\$169,727	\$92,133	\$4,340	\$266,200	27.45%
Watchem	\$175,102	\$28,313	n.a.	\$203,415	47.68%
Wooroonook	\$200,041	\$23,735	n.a.	\$223,775	37.94%
<b>Total Buloke</b>	<b>\$749,163</b>	<b>\$255,264</b>	<b>\$14,460</b>	<b>\$1,018,887</b>	<b>45.20%</b>
<b>Hindmarsh Shire</b>					
Wimmera – Dimboola	\$437,480	\$104,545	\$35,758	\$577,784	15.65%
Wimmera – Jeparit	\$36,559	\$11,159	\$17,738	\$65,455	22.26%
Nhill Lake	\$19,788	\$48,374	\$29,580	\$97,743	-56.38%
<b>Total Hindmarsh</b>	<b>\$493,827</b>	<b>\$164,079</b>	<b>\$83,076</b>	<b>\$740,982</b>	<b>-4.66%</b>
<b>Horsham Rural City</b>					
Wimmera River - Horsham	\$506,886	\$210,311	\$186,378	\$903,575	10.75%
Green Lake	\$4,300	\$14,000	\$2,610	\$20,910	-79.33%
Taylor's Lake	\$201,820	\$36,229	n.a.	\$238,048	-13.74%
Toolondo	\$88,887	\$29,896	n.a.	\$118,783	-45.25%
<b>Total Horsham</b>	<b>\$801,893</b>	<b>\$290,435</b>	<b>\$188,988</b>	<b>\$1,281,316</b>	<b>-9.13%</b>
<b>Northern Grampians</b>					
Bellfield	\$300,330	\$43,364	\$45,155	\$388,849	35.00%
Fyans	\$2,564,936	\$37,320	\$12,996	\$2,615,252	-7.14%
Lonsdale	\$19,157	\$13,107	\$10,269	\$42,533	-47.41%
Walkers	\$133,654	\$33,524	n.a.	\$167,179	0.40%
Wartook	\$21,692	\$10,888	\$2,900	\$35,480	45.87%
<b>Total Northern Grampians</b>	<b>\$3,039,770</b>	<b>\$138,203</b>	<b>\$71,320</b>	<b>\$3,249,292</b>	<b>-3.76%</b>
<b>West Wimmera</b>					
Charlegark	\$198,896	\$36,706	n.a.	\$235,602	-11.24%
Ratzcastle	\$148,624	\$11,000	n.a.	\$159,624	-21.83%
Bringalbert	\$65,736	\$32,407	n.a.	\$98,143	n.a.
Wallace	\$887,458	\$89,609	\$35,525	\$1,012,592	20.49%
<b>Total West Wimmera</b>	<b>\$1,300,714</b>	<b>\$169,722</b>	<b>\$35,525</b>	<b>\$1,505,961</b>	<b>14.95%</b>
<b>Yarriambiack Shire</b>					
Brim	\$278,321	\$104,481	n.a.	\$382,802	8.49%
Beulah	\$93,214	\$25,116	n.a.	\$118,330	4.31%
Lascalles	\$320,781	\$164,000	\$13,515	\$498,296	-6.06%
Marma	\$116,866	\$15,034	\$19,092	\$150,992	16.14%
Warracknabeal Weir Pool	\$373,305	\$90,676	\$40,375	\$504,356	-0.83%
<b>Total Yarriambiack Shire</b>	<b>\$1,182,487</b>	<b>\$399,306</b>	<b>\$72,982</b>	<b>\$1,654,775</b>	<b>1.19%</b>
<b>Southern Grampians Shire</b>					
Rocklands Reservoir	\$1,066,195	\$126,469	n.a.	\$1,192,664	n.a.
<b>Total WSM</b>	<b>\$8,634,048</b>	<b>\$1,543,478</b>	<b>\$466,350</b>	<b>\$10,643,877</b>	<b>15.56%</b>

Estimates of the direct expenditure by users of the lakes and weirs at local businesses in the Wimmera Southern Mallee municipalities are detailed in Table 2.5.

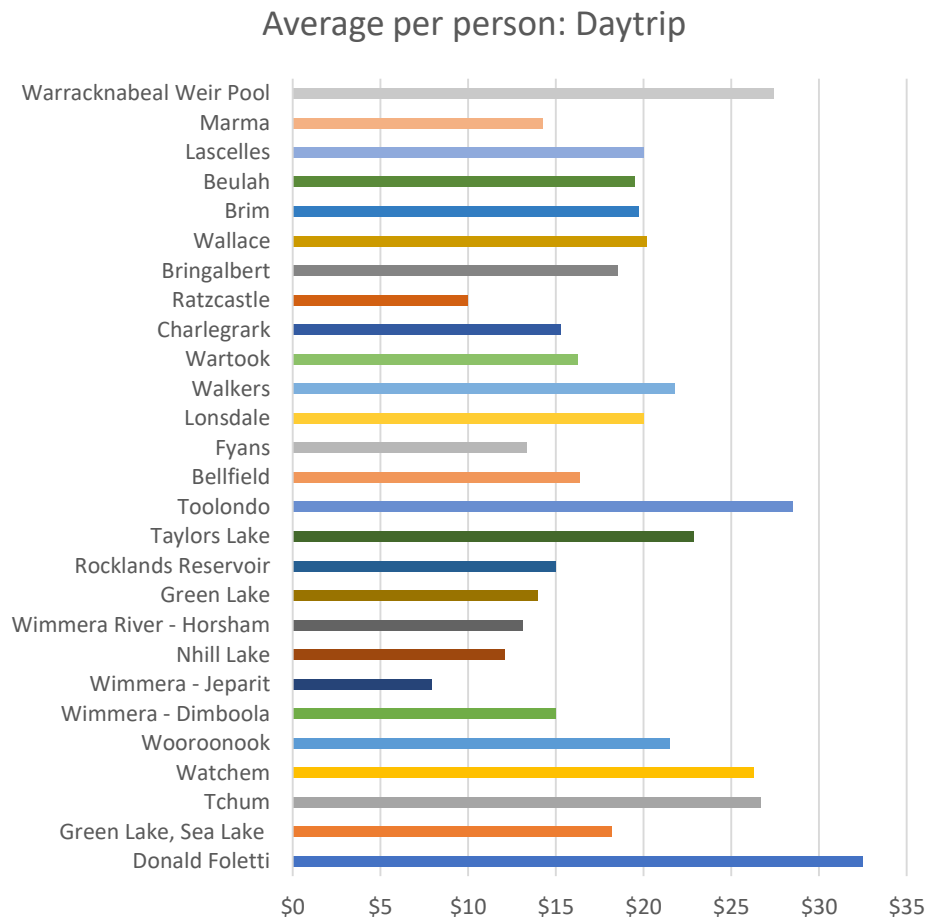
**Table 2.5: Estimated Functional Expenditure by Lake and Weir Users at Businesses from Recreational Water User Customers, 2018-19**

<b>User Expenditure at Regional Businesses</b>	<b>Café, Milk bar, Eat in Meal, Takeaway</b>	<b>Supermarkets, Groceries</b>	<b>Fuel, vehicle and equipment maintenance</b>	<b>Hotels, Motels, Entertainment</b>	<b>All Other (inc health needs, sports goods, books, hardware)</b>	<b>Total</b>
Buloke	\$286,119	\$316,026	\$95,295	\$226,270	\$95,177	\$1,018,887
Hindmarsh	\$209,239	\$237,260	\$51,912	\$233,146	\$9,425	\$740,982
Horsham	\$237,927	\$523,105	\$97,478	\$229,218	\$193,588	\$1,281,316
Northern Grampians	\$966,186	\$862,800	\$304,530	\$992,993	\$122,784	\$3,249,292
West Wimmera	\$317,692	\$713,969	\$146,224	\$224,734	\$103,342	\$1,505,961
Yarriambiack	\$350,198	\$464,981	\$148,831	\$573,916	\$116,849	\$1,654,775
Southern Grampians (Rocklands)	\$181,682	\$597,402	\$154,678	\$205,088	\$53,815	\$1,192,664
<b>Total</b>	<b>\$2,549,043</b>	<b>\$3,715,543</b>	<b>\$998,947</b>	<b>\$2,685,365</b>	<b>\$694,979</b>	<b>\$10,643,877</b>

**Figure 2.5 Average Expenditure by Overnight Visitors to Recreational Water Facilities (per person per day)**



**Figure 2.6 Average Expenditure by Active Day Visitors to Recreational Water Facilities (per person per day)**



### 2.3 HEALTH AND COMMUNITY CONTRIBUTION

Local communities report that the Wimmera Southern Mallee's recreational water facilities make an extremely important contribution to the social fabric of the region's towns, provide a critical outlet for physical and mental relaxation, enhance the amenity of towns and rural areas, and improve the health of residents and visitors to the region. Community impacts are strong across all recreational water facilities.

Physical health benefits analysed in this assessment are derived from the prevention of chronic diseases (such as breast cancer, coronary heart disease, diabetes, bowel cancer and stroke). Mental health benefits are derived from the prevention of anxiety and depression.

The value of Wimmera Southern Mallee recreational water residents' health contribution has been based on the prevention of these physical and mental diseases among the 2018-19 recreational water participation base<sup>4</sup> and are considered conservative estimates. They are focussed on selected health issues which are evidenced to be attributed to physical inactivity. Estimated health benefits to country Victorians, directly from the water facilities in 2017-18 and 2018-19 are:

	2018-19	2017-18
- Physical health benefits	\$3,310,023	\$3,549,879
- Mental health benefits	\$ 397,917	\$ 255,799
- Total	\$3,708,007	\$3,805,678.

<sup>4</sup> Assessment using methodology provided by Sport Business Partners

### 3. RECREATIONAL WATER FACILITIES IN BULOKE SHIRE

#### 3.1 OVERVIEW

Buloke Shire is the fourth largest local government area in terms of population, and the second largest in area, in the Wimmera Southern Mallee. Although it is serviced by the Wimmera Mallee Pipeline it is frequently included in Victoria's Loddon Mallee North region. At June 30<sup>th</sup>, 2018 it had an estimated resident population of 6,184<sup>5</sup> having decreased by 0.3% in the last year; the greatest rate of decrease in the region. The main townships are Wycheproof, Donald, Charlton, Birchip and Sea Lake, with many smaller villages/towns that have dwindled since with the aggregation and automation of grain farming (such as Berriwillock, Culgoa, Watchem, Nullawil and Nandaly). The towns mostly servicing the selected recreational water facilities in Buloke Shire are Donald, Birchip, Charlton, and Watchem.

Buloke's economy is dominated by agriculture (mainly dry land cropping and livestock) which generates more than half the value of production and employed 29.2% of all workers in 2016. The other major employing industries in Buloke Shire are, in order:

- Health care and social assistance (12.2%)
- Education and training (9.8%).
- Retail trade (8.1%)
- Construction (5.4%).

Several Buloke Shire towns have high levels of socio-economic disadvantage. The Australian Bureau of Statistics uses data from its Censuses of Population and Housing to calculate SEIFA Indices (Socio-Economic Indices for Areas). These indices provide an overview or summary measure of Census data, rather than looking at individual items. The indices rank geographic areas across Australia in terms of their relative socio-economic advantage and disadvantage. For each index, every geographic area in Australia is given a SEIFA score which measures how relatively 'advantaged' or 'disadvantaged' that area is compared with other areas in Australia.

Table 3.1 shows that the Shire's larger towns Sea Lake, Donald, Wycheproof, Charlton, and Birchip are within the most disadvantaged 30% of all 'suburbs' in Victoria, with:

- Sea Lake being the most disadvantaged, ranking 106<sup>th</sup> of all 2,672 suburbs in the State.
- Wycheproof ranking 124<sup>th</sup>
- Charlton ranking 252<sup>nd</sup>
- Donald ranking 277<sup>th</sup>
- Birchip ranking 706<sup>th</sup>

The smaller communities of Berriwillock, Watchem and Nandaly are relatively advantaged.

<sup>5</sup> ABS, Regional Population Growth by LGA 2018 (released March 2019)

**Table 3.1: SEIFA Indices<sup>6</sup> for Buloke Shire Suburbs, 2016**

	Usual Resident Population	SEIFA Score	Ranking within Victoria			Minimum score for SA1s in area <sup>7</sup>	Maximum score for SA1s in area
			Rank	Decile	Percentile		
Berriwillock	184	1003	1345	6	31	1003	1003
Birchip	702	970	706	3	27	967	1002
Charlton	1,050	923	252	1	10	907	1038
Donald	1,498	927	277	2	11	891	1036
Nandaly	39	1024	1810	7	68	1024	1024
Sea Lake	640	896	106	1	4	869	1024
Watchem	114	1002	1294	5	49	1002	1002
Wycheproof	635	900	124	1	5	868	1007

Note: The SEIFA Index used in this table relates to Socio-Economic Advantage and Disadvantage, 2016.

The Australian Bureau of Statistics broadly defines relative socioeconomic advantage and disadvantage in terms of people's *access to material and social resources, and their ability to participate in society*. There were 2,672 state suburbs in Victoria. A score of 1,000 or above tends to indicate an area which is relatively advantaged, and a score below 1,000 is an area which is relatively disadvantaged. In any of the Wimmera Southern Mallee 'suburbs' there are likely to be pockets which are relatively more advantaged and disadvantaged than the suburb as a whole. The minimum and maximum scores for these smaller pockets (shown as SA1s, Statistical Area 1s) are presented in the final two columns of the table.

Fisheries Victoria has stocked 151,100 fingerlings and advanced stocker fish in the selected lakes in Buloke Shire during the three-year period including 2018-19<sup>8</sup>. Native species have been the main focus of fish stocking programs (95% of all fish stocked) in Buloke Shire with golden perch and silver perch stocked in all four lakes. Details of the number and species of stockings over this period is summarised in Table 3.2.

**Table 3.2 Fish Released in Buloke Shire Selected Waterways 2016-2019**

Units stocked (fingerlings and/or advanced stockers)	Rainbow Trout	Murray Cod	Golden Perch	Silver Perch	Total
Donald Folletti Park	2,100		12,000	15,000	29,100
Green Lake, Sea Lake					0
Tchum Lake	6,000		21,000	35,000	62,000
Watchem Lake			15,000	10,000	25,000
Wooroonook Lake			15,000	20,000	35,000

## 3.2 SELECTED RECREATIONAL WATER FACILITIES

### 3.2.1 Lake Wooroonook

Lake Wooroonook is a natural lake situated 13 kilometres west of Charlton on the Borung Highway, 21 kilometres south of Wycheproof and 23 kilometres north-east of Donald. The Lake Wooroonook recreational water facility is located at the western end of a larger natural lake system known as the Wooroonook Lakes. The middle and eastern lakes have irregular water volumes.

<sup>6</sup> SEIFA indices are calculated by the Australian Bureau of Statistics using a range of variables on income, employment, housing, etc.

<sup>7</sup> SA1s are Statistical Areas Level 1 – a 'neighbourhood' scale of geography.

<sup>8</sup> Stocking fish in recreational waterways is considered similar to providing an asset, for which there will be a return on investment over three years.

The lake volume is 700 megalitres. Annual 'top-up' volume from the Wimmera Mallee Pipeline meets the evaporation and seepage losses and is supplemented by natural runoff in wetter periods. The pipeline supply is delivered at a heavily subsidised rate per megalitre which reflects the engagement undertaken by GWMWater with its customer base in development of pricing submissions.

The waterway manager (under the Marine Safety Act, 2010) for Lake Wooroonook is Buloke Shire Council, and foreshore management is the responsibility of the Wooroonook Committee of Management.

The system was an important source of water for Aboriginal communities over tens of thousands of years and, more recently, in Charlton's early colonial settlement as a place for fishing, swimming and boating. The current facilities include 10 powered sites, an amenities block, BBQ, boat launching area, playground and a pontoon. The lake is well suited to nature walks, water skiing, swimming, fishing, and camping or caravanning on the foreshore. Adjacent wetlands in the system are suited to duck hunting in season.



Wooroonook attracts retired couples and small groups seeking a quiet and relatively isolated location for camping and caravanning. On weekends during warmer months, the lake is popular as a fishing destination.

Estimated overnight visitors and day trip users of Lake Wooroonook in 2016-17 to 2018-19 are summarised in Table 3.3. These estimates have been developed through interviews on site, online surveys, and discussions with Wooroonook Committee of Management representatives.



**Table 3.3: Estimated Overnight and Day Visitors to Lake Wooroonook, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Total Participants
2016-17	764	3,630	1,094	1,858
2017-18	1,320	4,903	1,092	2,371
2018-19	1,523	6,596	1,105	2,628
% per annum change 2016-17 to 2018-19	41.2%	34.8%	0.5%	18.9%

### 3.2.2 Tchum Lake

Tchum Lake system is located on the Birchip-Wycheproof road, about 8 kilometres east of Birchip. The natural lakes area includes sections to the north and south of the road. The southern lake has been modified to provide for permanent recreational water activities, while the northern lakes area is an irregular wetlands area.

The recreational (southern) lake volume is approximately 730 megalitres of water. Annual 'top-up' volume from the Wimmera Mallee Pipeline meets the evaporation and seepage losses and is supplemented by natural runoff in wetter periods. The pipeline supply is delivered at a heavily subsidised rate per megalitre which reflects the engagement undertaken by GMMWater with its customer base in development of pricing submissions. The waterway manager (under the Marine Safety Act, 2010) is the Tchum Lake Aquatic Club, and the club is also responsible for foreshore management.

Tchum Lake is a popular holiday spot for campers and water skiers. Lake users also participate in fishing and swimming. The lake is very busy at Easter and other summer holiday periods, and tends to be relatively quiet at other times of the year. As a holiday-period recreational lake facility, Tchum attracts larger family groups rather than the retired and 'grey nomad' caravanning group that are frequent users of other Wimmera Southern Mallee water facilities.

There is a membership structure which allows regular users to access powered and unpowered camping sites at reduced rates. Normal site fees are \$30 per night for powered sites and \$10 per night for unpowered sites.

Estimated overnight visitors and day trip users of Tchum Lake during 2016-17 to 2018-19 are summarised in Table 3.4. These estimates have been developed through interviews on site, online surveys, and discussions with the Committee of Management/Aquatic Club representatives.

**Table 3.4: Estimated Overnight and Day Visitors to Tchum Lake, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Passive Day Users	Total Participants
2016-17	1,344	3,830	3,510	1,459	6,313
2017-18	1,208	3,790	3,725	1,500	6,433
2018-19	1,622	5,450	3,455	1,550	6,627
% per annum change 2016-17 to 2018-19	9.9%	19.3%	-0.8%	3.1%	2.5%



### 3.2.3 Lake Watchem

Part of the Djadjawrybg and Djabwyrung traditional lands, Watchem was settled by Europeans in the 1870's. Lake Watchem is located on the Watchem-Warracknabeal road just 1.3 kilometres to the west of Watchem township and the Sunraysia Highway. It is a focal point of the town, which now has a very limited commercial centre (consisting of a general store, hotel, aquatic centre/pool, and other sports facilities).

The lake has a small island in the centre which breaks waves created by speed boats and makes Watchem a good lake for water skiing. The lake is also established for swimming, fishing and camping/caravanning. Powered sites are available for \$20 per night and unpowered sites for \$10 per night.

Lake Watchem holds approximately 260 megalitres of water. Annual 'top-up' volume from the Wimmera Mallee Pipeline meets the evaporation and seepage losses and is supplemented by natural runoff in wetter periods. The pipeline supply is delivered at a heavily subsidised rate per megalitre which reflects the engagement undertaken by GWMWater with its customer base in development of pricing submissions. The waterway manager (under the Marine Safety Act, 2010) is the Lake Watchem Committee of Management, and boating activities are subject to Victorian state boating regulations.



Lake Watchem users peak during the Christmas holiday period when over 500 people visit in family groups and again in the Easter period. At other times, the lake is frequented by grey nomad type caravaners, and an estimated 1,076 local/regional participants.

Estimated overnight visitors and day trip users of Lake Watchem in 2016-17 to 2018-19 are summarised in Table 3.5. These estimates have been developed through interviews on site during November 2018 to April 2019 and discussions with the Committee of Management representatives.

**Table 3.5: Estimated Overnight and Day Visitors to Lake Watchem, 2016-17 and 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Total Participants
2016-17	1,139	3,203	900	2,039
2017-18	1,110	3,738	1,030	2,140
2018-19	1,193	5,274	1,076	2,270
% per annum change 2016-17 to 2018-19	2.4%	28.3%	9.4%	5.5%

### 3.2.4 Donald's Folletti Caravan Park Lake

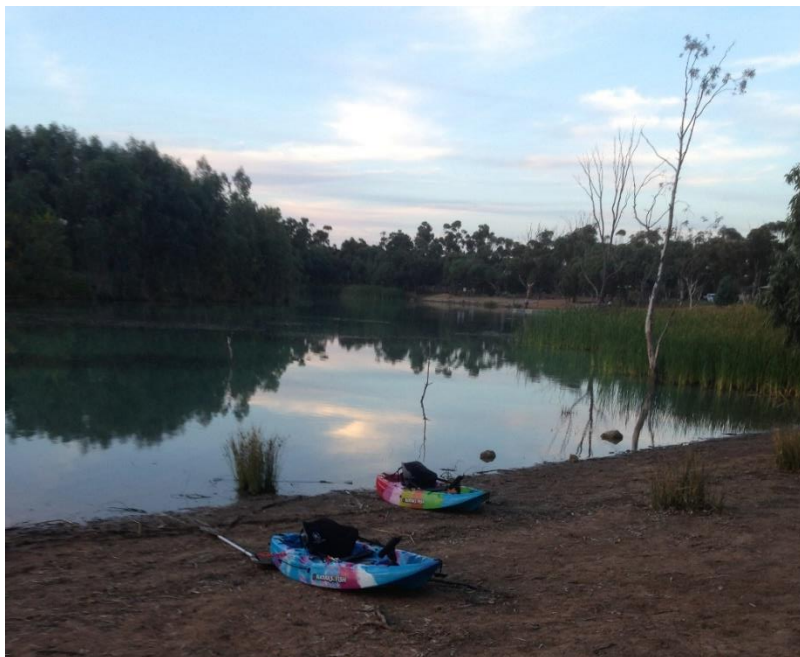
Folletti Caravan Park Lake is a small recreational facility in the heart of the Donald urban area. It is mostly used for fishing, kayaking/canoeing and environmental amenity (walks, picnics and camping on the foreshore). Powered sites are available for \$20 per night. As a centrally located, urban lake, many of the visitors, in the past, stayed for extended periods to access facilities in Donald township and/or as a base to visit friends and relatives. In 2017-18 the local football club took over responsibility for many of the management functions at the lake, on behalf of Council (which had previously employed a non-resident part time manager). The number of visitors using the lake and the lake environs improved substantially in 2017-18, (although visit nights reduced somewhat due to removal of some tenants who had become semi-permanent) and overnight visits further increased in 2018-19.

Folletti Caravan Park Lake holds 50 megalitres of water. Annual ‘top-up’ volume from the Wimmera Mallee Pipeline meets the evaporation and seepage losses and is supplemented by natural runoff in wetter periods. The pipeline supply is delivered at a heavily subsidised rate per megalitre which reflects the engagement undertaken by GWMWater with its customer base in development of pricing submissions. The waterway manager (under the Marine Safety Act, 2010) is Buloke Shire Council, and boating activities are subject to Victorian state boating regulations.

Estimated overnight visitors and day trip users of Folletti Caravan Park Lake during 2016-17 to 2018-19 are summarised in Table 3.6. These estimates have been developed through interviews on site, and discussions with Committee of Management representatives.

**Table 3.6: Estimated Overnight and Day Visitors to Folletti Caravan Park Lake, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Passive Day Users	Total Participants
2016-17	912	4,742	2,197	3,645	6,754
2017-18	1,253	4,320	2,341	3,680	7,274
2018-19	1,575	5,607	2,320	3,680	7,575
% per annum change 2016-17 to 2018-19	31.4%	8.7%	2.8%	0.5%	5.9%



### 3.2.5 Green Lake, Sea Lake

Green Lake at Sea Lake was empty during the millennium drought of the early 2000s. It filled from natural inflows and pipeline supply in 2011-12, but the high seepage losses that occurred resulted in a collective decision that there be no further pipeline supply until the seepage issues were addressed. In 2018, following a great deal of work by the community, state and local government agencies a State Government funded remediation project to rework and compact the lake bed was completed.

A GWMWater pipeline supply from the Murray River commenced in September 2018 and it is on target to reach full supply from empty by September 2019.

Interviewing at this lake began on the Australia Day weekend. It appeared people had been using lake through school holidays:

- There were 47 active users on Australia Day (Jan 26th), in 11 groups
- An estimated average of 6 groups per day during 25 December to 28 January, and
- At Easter: 108 people staying overnight in 12 groups, with a further 30 people per day on visits.

The estimated recreational usage of the Lake during this early period after its redevelopment, is presented in Table 3.7.

**Table 3.7: Estimated Overnight and Day Visitors to Green Lake, Sea Lake, 2018-19**

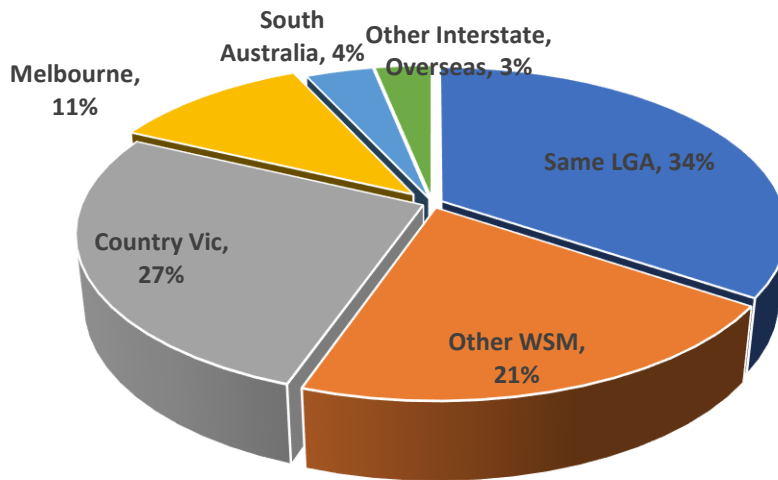
	Overnight Visitors	Total visit nights	Active Day Users	Total Participants
2018-19	168	600	1,962	2,129



### 3.3 ECONOMIC CONTRIBUTION

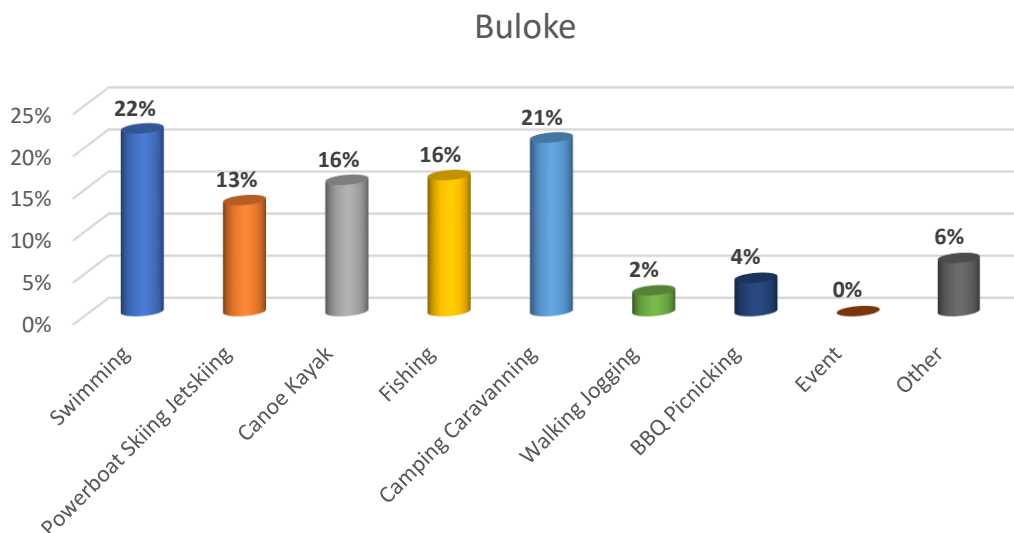
Figure 3.1 shows 55% of recreational water users at Buloke were Wimmera Southern Mallee residents in 2018-19, and a further 27% were from other parts of country Victoria. Melbourne, interstate and overseas visitors made up a total of 18% of visitation.

**Figure 3.1 Residential Location of Recreational Water Users, Buloke Shire**



During 2018-19 Buloke Shire Council implemented around \$4.0 million in capital works to upgrade amenities at Lake Tchum, Lake Watchem and Lake Wooroonook, and flood road rehabilitation projects. The Lake Tchum project included renovation of toilet and shower areas and a new shower and toilet area with disability access as well as laundry area and storeroom. The Lake Watchem project included construction of new male, female and disability access toilets as well as shower and laundry areas. The work at Lake Wooroonook included construction of new male, female and disability access toilets as well as shower and laundry areas. These improvements caused some disruption to recreational participation at the lakes during the year, but generally led to higher usage and satisfaction among the user groups. Relative participation in recreational activities at Buloke lakes in 2018-19 (during November 2018 to April 2019) is shown in Figure 3.2.

**Figure 3.2 Recreational Activities at Buloke Lakes, 2018-19**



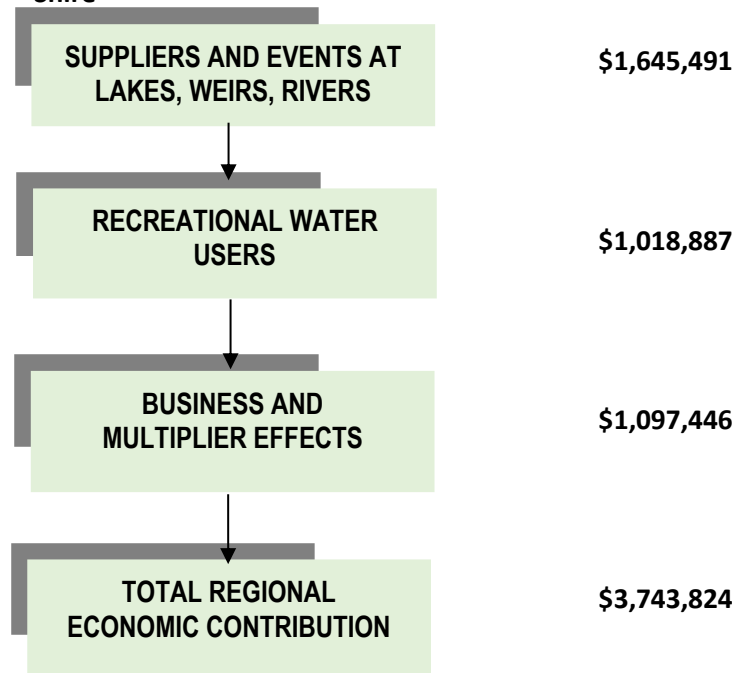
Tables 3.8 and 3.9 and Figure 3.3 detail the estimated 2018-19 economic contribution of the assessed recreational water facilities in Buloke Shire.

**Table 3.8: Estimated Economic Contribution 2018-19: Recreational Water Facility Users**

	Overnight Visitors	Total Visit Nights	Active Day Visitors	Passive Day Visitors	Total Participation	% Change on 2017-18
<b>Visitation and Participation</b>						
Donald Folletti Lake	1,575	5,607	2,320	3,680	7,575	4.14%
Green Lake, Sea Lake	168	600	1,962	n.a.	2,129	n.a.
Tchum Lake	1,622	5,450	3,455	1,550	6,627	3.01%
Lake Watchem	1,193	5,274	1,076	n.a.	2,270	6.06%
Wooroonook Lake	1,523	6,596	1,105	n.a.	2,628	10.86%
<b>Total Buloke</b>	<b>6,081</b>	<b>23,526</b>	<b>9,918</b>	<b>5,230</b>	<b>21,229</b>	<b>16.53%</b>
<b>Visitor Expenditure (\$)</b>						
<b>Buloke Shire</b>						
Donald Folletti		\$191,801	\$75,400	\$10,120	\$277,321	43.80%
Green Lake, Sea Lake		\$12,492	\$35,683	n.a.	\$48,175	n.a.
Tchum		\$169,727	\$92,133	\$4,340	\$266,200	27.45%
Watchem		\$175,102	\$28,313	n.a.	\$203,415	47.68%
Wooroonook		\$200,041	\$23,735	n.a.	\$223,775	37.94%
<b>Total Buloke Shire</b>		<b>\$749,163</b>	<b>\$255,264</b>	<b>\$14,460</b>	<b>\$1,018,887</b>	<b>45.20%</b>

**Table 3.9: Estimated Economic Contribution 2018-19: Supplier Organisations**

Suppliers: Direct	
Caravan Parks/Committees of Management	\$102,194
Events and Other Businesses	\$20,000
Statutory Agencies <sup>9</sup>	\$1,523,298
<b>Total Buloke Shire</b>	<b>\$1,645,491</b>

**Figure 3.3 2018-19 Estimated Recreational Water Regional Economic Contribution: Buloke Shire**<sup>9</sup> Statutory agencies include Fisheries Victoria, Wimmera CMA and GWM Water

## 4. RECREATIONAL WATER FACILITIES IN HINDMARSH SHIRE

### 4.1 OVERVIEW

Hindmarsh Shire is in the north west of the Wimmera Southern Mallee region, with the Western Highway and the Melbourne to Adelaide rail line passing the southern section of the Shire. It is the third largest LGA in area (after West Wimmera and Buloke) and has the second smallest population (West Wimmera Shire has the smallest). In fact, West Wimmera, Buloke and Hindmarsh have the lowest population densities of all LGAs in Victoria. Around 80% of Hindmarsh's population reside in its four main townships; Dimboola, Jeparit, Nhill and Rainbow. The largest of these townships (Nhill) is 74 kilometres north of the urban area of Horsham.

At June 2018, Hindmarsh had a population of 5,645<sup>10</sup>, having decreased by 1.3% in the last year. This is a similar rate of population decline to those experienced in West Wimmera and Yarriambiack.

Hindmarsh's major industry is agriculture (principally grain, sheep, oilseeds and legumes) which accounted for 26.1% of its workers in 2016, although decreasing at a rate of 1.76% per year. Value adding to agriculture is also important, with major duck processing, and grain handling businesses helping to make manufacturing the third largest employing industry (at 8.1%). Other significant industries include health services (which is the second largest employing industry at 19.1% of all jobs, and has been increasing at 0.86% per annum), and retail and employment/training (the equal fourth largest employing industries). Hindmarsh Shire has a concentration of grain storage businesses (silo and conveyance equipment manufacturers) that is unique in Victoria. Tourism is recognised as an emerging industry and Hindmarsh Shire is part of the Wimmera Mallee Tourism regional grouping.

Hindmarsh Shire towns have high levels of socio-economic disadvantage. Table 4.1 shows that the four main towns are within the most disadvantaged 20% of all 'suburbs' in Victoria, with:

- Jeparit being the most disadvantaged, ranking 37<sup>th</sup> of all 2,672 suburbs in the State.
- Dimboola ranking 189<sup>th</sup>
- Nhill ranking 347<sup>th</sup>
- Rainbow ranking 371<sup>st</sup>.

**Table 4.1: SEIFA Indices for Hindmarsh Shire Suburbs, 2016**

	Usual Resident Population		Ranking within Victoria			Minimum score for SA1s in area	Maximum score for SA1s in area
		Score	Rank	Decile	Percentile		
Dimboola	1,730	913	189	1	8	837	1012
Jeparit	477	849	37	1	2	799	975
Nhill	2,184	939	347	2	13	897	1042
Rainbow	683	943	371	2	14	874	1044

Note: The SEIFA Index used in this table relates to Socio-Economic Advantage and Disadvantage.

The Australian Bureau of Statistics broadly defines relative socioeconomic advantage and disadvantage in terms of people's *access to material and social resources, and their ability to participate in society*. There are 2,672 state suburbs in Victoria. A score of 1,000 or above tends to indicate an area which is relatively advantaged, and a score below 1,000 is an area which is relatively disadvantaged. In any of the Wimmera Southern Mallee 'suburbs' there are likely to be pockets which are relatively more advantaged and disadvantaged than the suburb as a whole. The minimum and maximum scores for these smaller pockets (shown as SA1s, Statistical Area 1s) are presented in the final two columns of the table.

<sup>10</sup> ABS, Regional Population Growth by LGA 2018 (released March 2019)



Fisheries Victoria has stocked 600 advanced stocker rainbow trout in Nhill lake during the three-year period including 2018-19<sup>11</sup>. This was the only recreational water facility in Hindmarsh Shire explicitly stocked. However, there were fish stocking programs for the Wimmera River, reported in the Horsham City section, which undoubtedly provide fish stocks downstream at Dimboola and Jeparit.

## 4.2 SELECTED RECREATIONAL WATER FACILITIES

### 4.2.1 Wimmera River Dimboola

The Wimmera River rises in the Pyrenees Ranges near Ararat, flows through Horsham and Dimboola and eventually drains into Lake Hindmarsh, a short distance beyond Jeparit. It is the longest land-locked river in Victoria. In Dimboola, the River flows between the town and the Little Desert. In high rainfall years river flow can be large with occasional floods. During times of low rainfall, the weir retains water near the town while elsewhere the river becomes a series of pools<sup>12</sup>.

Dimboola district was occupied by the Wotjobaluk people prior to white settlement, and when settled by Europeans, the prolific branches and tributaries of the Wimmera River led to the town being initially called 'Nine Creeks'. An area along and adjacent to the river, near the centre of Dimboola is still known as the Nine Creeks run, and this forms part of the recreational water facilities of the Wimmera River. Environmental flows have substantially reduced the periods when the river has been too low for water to flow regularly, although flows can cease in droughts.



<sup>11</sup> Stocking fish in recreational waterways is considered similar to providing an asset, for which there will be a return on investment over three years.

<sup>12</sup> Sourced from Dimboola.com.au

There are some private farm stay and camping sites along the Wimmera River in Dimboola (particularly in the Horseshoe Bend area), but the main accommodation provision is the Riverside Holiday Park owned and operated by Hindmarsh Shire Council. The park has 55 powered sites, a flexible range of unpowered sites, and 7 furnished cabins. It is estimated that up to 40% of visitors to the Holiday Park are attracted by the river participate in either active or passive activities (ie utilise the amenity of the river) during their visit.

In addition to regular swimming, fishing and boating activities on the river, the main river events are the Dimboola Fishing Classic (promoted as the Wimmera's only "bank and boat" community based fishing event) and the Rowing Regatta. As a water course which runs through the Dimboola township, the Wimmera River has a relatively higher number of passive day users than many other Wimmera Southern Mallee recreational water facilities.

The *Wimmera River Discovery Trail* walking and cycling trail along the Wimmera River (Stage 1 between Dimboola and Jeparit), when complete, will add another tourism attraction intrinsically related to the Wimmera River.

Estimated overnight visitors and day trip users of Wimmera River at Dimboola in 2016-17 and 2017-18 are summarised in Table 4.2. These estimates have been developed through interviews on site, online surveys, and data from Hindmarsh Shire Council, and discussions with the Riverside Holiday Park management.

**Table 4.2: Estimated Overnight and Day Visitors to Wimmera River, Dimboola 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Passive Day Users	Total Participants
2016-17	2,800	8,197	6,380	13,680	22,860
2017-18	3,744	10,599	6,445	13,550	23,739
2018-19	3,057	13,974	6,970	13,753	23,780
% per annum change 2016-17 to 2018-19	4.48%	30.57%	4.52%	0.27%	1.99%

#### 4.2.2 Wimmera River, Jeparit

The Wimmera River flows through Jeparit, south of Rainbow, as its final town, prior to draining into Lake Hindmarsh. It flows alongside the Jeparit township. Lake Hindmarsh was not included in the 2017-18 or 2018-19 assessments since it has little or no water for recreational activities at present. In very wet conditions, Lake Hindmarsh fills and overflows into Outlet Creek and Lake Albacutya, then several smaller lakes beyond. During times when Lake Hindmarsh has a good level of water (such as 2010-11 when it was around two thirds full) the recreational water use brings significant increases to the local visitor economy.

Prior to white settlement the Jeparit area was occupied by the Gromiluk (part of the Wotjobaluk people). Explorer Edward Eyre camped at Lake Hindmarsh in 1838 while searching for an overland route from Melbourne to Adelaide, and the land, which included the site of Jeparit townsite, was taken up by Robert von Stieglitz in 1846. The *Edward John Eyre Heritage River Walk* follows alongside the river through town.

There are many camping sites along the Wimmera River around Jeparit and Lake Hindmarsh, and the main accommodation provision is the Jeparit Caravan Park, owned and operated by Hindmarsh Shire Council. The park has large powered and unpowered sites, barbecues, laundry, toilet and showers facilities. Two new cabins were installed in 2017 on the river foreshore. As in Dimboola, the river runs through the Jeparit township, and has a relatively high number of both active and passive day users. The annual Jeparit Fishing Competition, held on Sunday of the Easter long weekend, is the major local event using the river.

The 2019 Jeparit Fishing Competition had 268 entrants in total (a decrease on the 459 entrants in 2018). An estimated 42% stayed overnight for the event. Around 27% of fishing competition entrants were local Hindmarsh Shire residents.



Visitation numbers increased a little on 2017-18. Hindmarsh Shire Council has indicated an interest in capitalising on the Wimmera River environs at Jeparit in order to stimulate additional visitation. Council is looking to develop new ideas for facilities, such as a new area on the riverbanks for camping.

Estimated overnight visitors and day trip users of Wimmera River at Jeparit in 2016-17 to 2018-19 are summarised in Table 4.3. These estimates have been developed through interviews on site, online surveys, data from Hindmarsh Shire Council, and the Jeparit Anglers Club.

**Table 4.3: Estimated Overnight and Day Visitors to Wimmera River, Jeparit and Lake Hindmarsh 2016-17 and Jeparit only in 2017-18 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Passive Day Users	Total Participants
2016-17	1,155	3,935	1,396	7,295	9,846
2017-18	390	1,411	1,350	6,250	7,990
2018-19	538	1,517	1,414	6,450	8,402
% per annum change 2016-17 to 2018-19	-31.74%	-37.90%	0.62%	-5.97%	-7.63%

#### 4.2.3 Nhill Lake

Nhill Lake is a man-made recreation facility constructed in 1960. It is very much a lake built for local users, with shaded areas, a playground, and provision for swimming, fishing, boating and barbecues. A track around the lake provides 1 kilometre of flat surface which is suited to walking, cycling and running activities. The lawn area is used to host community events.

The Nhill Lake is run by a volunteer Committee of Management. A recently upgraded boardwalk links the lake to Jaypex Park on the Western Highway. GWMWater supplements the catchment, or stormwater runoff, into Nhill Lake with bore water from the GWMWater Groundwater Entitlement. The recreation levy is charged for bore water, and a volume up to 150 megalitres is supplied.

Nhill Lake is near the Nhill shopping centre on the southern edge of the urban area, in almost an ornamental botanic gardens type setting. It is a small lake with crystal clear water (in early 2017) and boat ramp access at the end of Clarence Street. Nhill Lake was originally part of Nhill Swamp. When full and clear there is boating, fishing, a boardwalk and plenty of bird life.



There are no camping sites on the foreshore of Nhill Lake. Nhill Caravan Park is close to the lake but is separated from it by the Nhill Swamp Wildlife Reserve. There was a bridge providing access from the Caravan Park to the lake, but this has been recently removed. The Caravan Park is privately owned and operated. It has 8 cabins, 45 powered sites, and a few non-powered sites. The majority of park stays are 1 to 2 nights, with most people staying as a stopover location between Melbourne and Adelaide or other major destinations. Only 20% of overnight visitors in summer months and 5% in winter months are estimated to participate in activities at the lake or take advantage of lake amenity.

Since 2014 there has been an annual *February Fiesta* at the Nhill Lake, with activities every Friday evening in February. Nhill Lake Reserve lights up to music, food, dancing, children's entertainment and art.

Estimated overnight visitors and day trip users of Nhill Lake in 2016-17 to 2018-19 are summarised in Table 4.4. These estimates have been developed through interviews on site and discussions with community groups and caravan park owners.

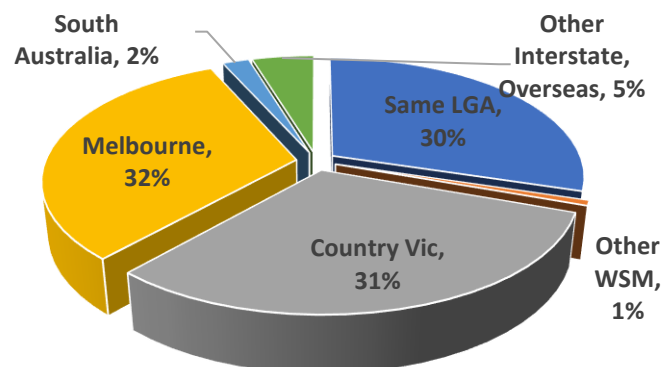
**Table 4.4: Estimated Overnight and Day Visitors to Nhill Lake 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Passive Day Users	Total Participants
2016-17	501	1,053	6,460	10,025	16,986
2017-18	596	1,254	6,730	10,560	17,886
2018-19	472	611	3,991	10,200	14,663
% per annum change 2016-17 to 2018-19	-2.93%	-23.83%	-21.40%	0.87%	-7.09%

#### 4.3 ECONOMIC CONTRIBUTION

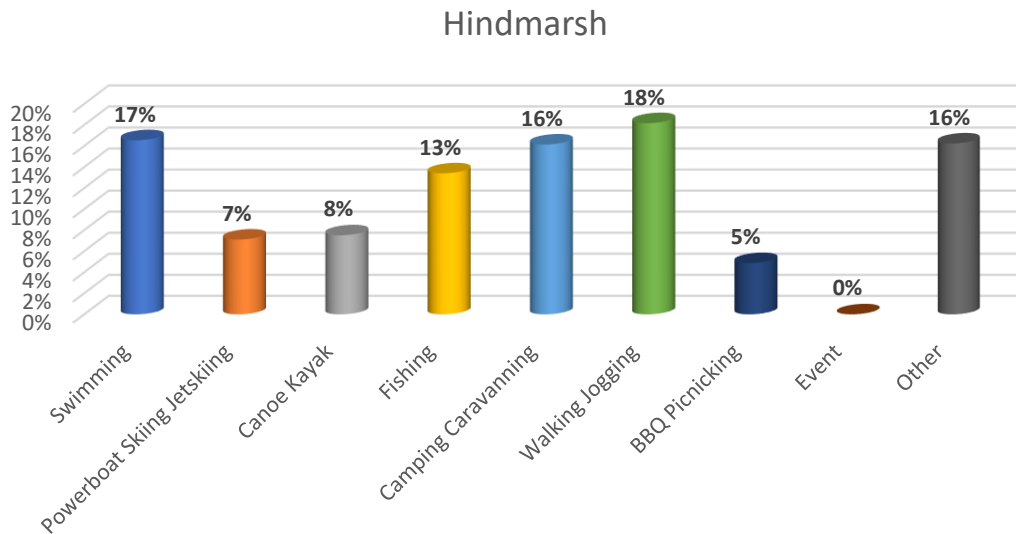
Figure 4.1 shows the majority (62%) of recreational water users at Hindmarsh Shire were locals and country Victorian residents in 2018-19, but the Shire's recreational water facilities also attracted a relatively large percentage of visitors from Melbourne (32%), interstate and overseas (7%).

**Figure 4.1 Residential Location of Recreational Water Users, Hindmarsh Shire**



Relative participation in recreational activities at Hindmarsh lakes and weirs in 2018-19 (during November 2018 to April 2019) is shown in Figure 4.2.

**Figure 4.2 Recreational Activities at Hindmarsh Lakes and Weirs, 2018-19**



Tables 4.5 and 4.6 and Figure 4.3 detail the estimated 2018-19 economic contribution of the assessed recreational water facilities in Hindmarsh Shire.

**Table 4.5: Estimated Economic Contribution 2018-19: Recreational Water Facility Users**

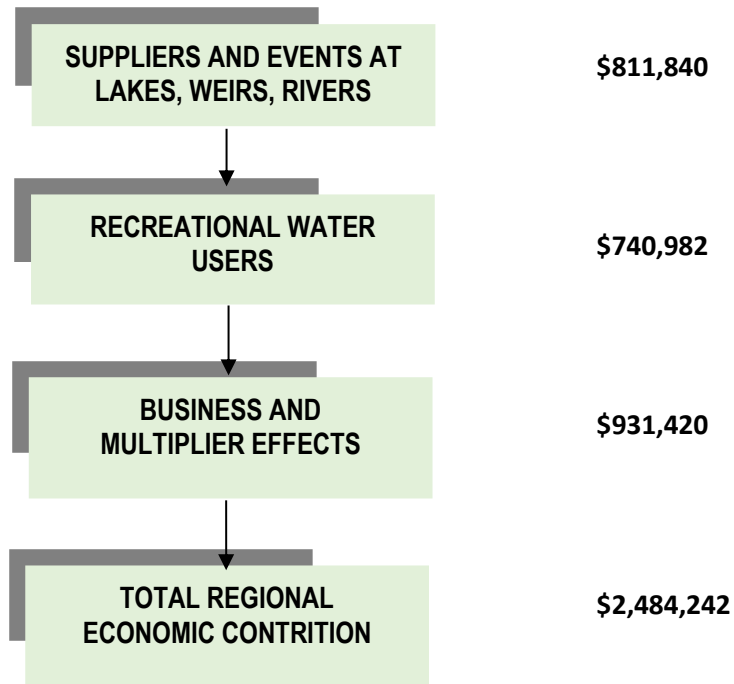
	Total Overnight Visitors	Total Visit Nights	Active Day Visitors	Passive Day Visitors	Total Participation	% Change on 2017-18
<b>Visitation and Participation</b>						
Wimmera River - Dimboola	3,057	13,974	6,970	13,753	23,780	0.17%
Wimmera River - Jeparit	538	1,517	1,414	6,450	8,402	5.15%
Nhill Lake	472	611	3,991	10,200	14,663	-18.02%
<b>Total Hindmarsh Shire</b>	<b>4,067</b>	<b>16,102</b>	<b>12,374</b>	<b>30,403</b>	<b>46,844</b>	<b>-5.58%</b>
<b>Visitor Expenditure (\$)</b>						
Wimmera River - Dimboola		\$437,480	\$104,545	\$35,758	\$577,784	15.65%
Wimmera River - Jeparit		\$36,559	\$11,159	\$17,738	\$65,455	22.26%
Nhill Lake		\$19,788	\$48,374	\$29,580	\$97,743	-56.38%
<b>Total Hindmarsh Shire</b>		<b>\$493,827</b>	<b>\$164,079</b>	<b>\$83,076</b>	<b>\$740,982</b>	<b>-4.66%</b>

**Table 4.6: Estimated Economic Contribution 2018-19: Supplier Organisations**

<b>Suppliers: Direct</b>	
Caravan Parks/Committees of Management	\$150,245
Events and Other Businesses	\$117,500
Statutory Agencies <sup>13</sup>	\$544,095
<b>Total Hindmarsh Shire</b>	<b>\$811,840</b>

<sup>13</sup> Statutory agencies include Fisheries Victoria, Wimmera CMA and GWM Water

**Figure 4.3 2018-19 Estimated Recreational Water Economic Contribution: Hindmarsh Shire**



## 5. RECREATIONAL WATER FACILITIES IN THE HORSHAM RURAL CITY

### 5.1 OVERVIEW

The Horsham Rural City is home to 37% of the population in the Wimmera Southern Mallee region (including Buloke Shire). It is in the central south of the region, around 300 kilometres north west of Melbourne and, at 4,267 square kilometres, is the smallest in area of all municipalities in Wimmera Southern Mallee.

Three highways pass through the LGA (the Western Highway, the Wimmera Highway and the Henty Highway) all passing through Horsham and providing connections between Horsham and Melbourne, Hamilton and Portland, Mildura and Adelaide. The Melbourne–Adelaide rail line also passes through Horsham.

The 2017 estimated resident population of Horsham was 19,875<sup>14</sup> and declined by just 0.1% in the past year. Around 75% of the population live within the urban area of Horsham. There are, however, about 40 other localities within the municipality.

Horsham is a service centre for the surrounding rural hinterland and, indeed, the region with higher order health, education facilities (including secondary colleges, a university campus and an agricultural college), retail and recreation and leisure facilities. The major industry is dryland and broadacre agriculture and it is home to a nationally acclaimed agricultural research centre, the Grains Innovation Park. Major employing industries are health care and social assistance (16.6% of jobs), retail (11.8%) and agriculture (9.2%).

Horsham urban area has high levels of socio-economic disadvantage. Table 5.1 shows that the ‘suburb’ of Horsham ranks 334<sup>th</sup> most disadvantaged of all 2,672 suburbs in the State. Natimuk ranks 549<sup>th</sup>. The smaller ‘suburb’ communities of Horsham Rural City (Brimpaen, Toolondo and McKenzies Creek) are relatively advantaged.

**Table 5.1: SEIFA Indices<sup>15</sup> for Horsham Rural City Suburbs, 2016**

	Usual Resident Population	SEIFA Score	Ranking within Victoria			Minimum score for SA1s in area <sup>16</sup>	Maximum score for SA1s in area
			Rank	Decile	Percentile		
Horsham	14,543	938	334	2	13	644	1058
Brimpaen	79	1067	2380	9	90	1067	1067
Drung	147	989	1032	4	39	989	989
Natimuk	514	958	549	3	21	934	1041
McKenzie Creek	136	1051	2237	9	84	1051	1051
Toolondo	59	1000	1235	5	47	1000	1000

Note: The SEIFA Index used in this table relates to Socio-Economic Advantage and Disadvantage.

The Australian Bureau of Statistics broadly defines relative socioeconomic advantage and disadvantage in terms of people's *access to material and social resources, and their ability to participate in society*. There are 2,672 state suburbs in Victoria. A score of 1,000 or above tends to indicate an area which is relatively advantaged, and a score below 1,000 is an area which is relatively disadvantaged. In any of the Wimmera Southern Mallee ‘suburbs’ there are likely to be pockets which are relatively more advantaged and disadvantaged than the suburb as a whole. The minimum and maximum scores for these smaller pockets (shown as SA1s, Statistical Area 1s) are presented in the final two columns of the table.

<sup>14</sup> ABS, Regional Population Growth 2018 (March 2019)

<sup>15</sup> SEIFA indices are calculated by the Australian Bureau of Statistics using a range of variables on income, employment, housing, etc.

<sup>16</sup> SA1s are Statistical Areas Level 1 – a ‘neighbourhood’ scale of geography.



Fisheries Victoria has stocked 859,593 fingerlings and advanced stocker fish in the selected lakes and the Wimmera River in Horsham Rural City during the three-year period including 2018-19<sup>17</sup>. Native species make up the overwhelming majority of stockings, except in Lake Toolondo which is a popular 'trophy trout' fishing destination. Those in the Wimmera River are potentially servicing recreational fishers along the downstream locations through Horsham City and Hindmarsh Shire.

Details of the number and species of stockings over this period are summarised in Table 5.2.

**Table 5.2 Fish Released in Horsham Rural City Selected Lakes and River 2016-2019**

Units stocked (fingerlings and/or advanced stockers)	Brown Trout	Rainbow Trout	Murray Cod	Golden Perch	Silver Perch	Total
<b>Horsham Rural City</b>						
Green Lake Horsham				40,000		40,000
Wimmera River				328,000	60,000	388,000
Taylors Lake			169,984	211,875		381,859
Toolondo Reservoir	32,266	17,468				49,734

## 5.2 SELECTED RECREATIONAL WATER FACILITIES

### 5.2.1 Wimmera River at Horsham

The Wimmera River is naturally an inland intermittent river. It rises in the Pyrenees, on the northern slopes of the Great Dividing Range, and flows generally north by west and drains into Lake Hindmarsh and Lake Albacutya, a series of ephemeral lakes. While they do not directly empty into a defined watercourse, this system is part of the catchment in the Murray-Darling basin.

The River weaves through suburban Horsham, with parkland and red gums lining long stretches of the river. The Wimmera River is popular for kayaking, canoeing and fishing. Horsham Rowing Club has a clubhouse and base on the riverbank.

There are several boat ramps and picnic areas available for use. A healthy number of Horsham residents use the riverside pathways for daily exercise routines; walking, jogging, or cycling. The Lawrie Rudolph Walk follows the path of the river along its northern bank, and there are several designated walking trails encouraging residents and visitors to experience the river, including:

- The Yanga Track (1.2 kilometres walk including two boardwalks across the river)
- Southbank trail
- Burnt Creek trail
- Weir Park/Wetlands trail
- Riverside trail.

The number of day users at the Wimmera River at Horsham is the greatest of all recreational water facilities in the Wimmera Southern Mallee. Fishing is the most popular Wimmera River activity, with walking, running and exercising along the river were the activities in which people participated most frequently (ie the passive day users group).

<sup>17</sup> Stocking fish in recreational waterways is considered similar to providing an asset, for which there will be a return on investment over three years.



Major annual events at the river are:

- Horsham Fishing Competition; conducted annually on the March Labour Day long-weekend. It is a family-oriented event which encourages participants to combine fishing with camping. Family and friends who wish to fish together in a quiet and relaxed environment can fish in an allocated area along the river reserved for this specific purpose. Angling clubs are allocated designated free camping and fishing areas. The fishing competition is a widely supported community event with considerable cash and in-kind contributions from local businesses, community organisations, Horsham Rural City Council, and Wimmera CMA.
- Great Wimmera River Duck Race in November at Sawyer Park. This event is a fundraiser for the Wimmera Health Care Group and part of the Kannamaroo Festival weekend, with around 350 active participants.
- In 2018-19 there was also a statewide Dragon Boat Regatta, held in November.

There is a vast array of accommodation options in Horsham, including hotels and motels and caravan parks well located for access to the river. The number of day users at the Wimmera River at Horsham is the greatest of all recreational water facilities in the Wimmera Southern Mallee.

Total estimated overnight visitors and day users of the Wimmera River at Horsham in 2016-17 to 2018-19 are presented in Table 5.3. These estimates have been developed through interviews on site and in Horsham business area, and liaison with Horsham Angling Club, Fishing Competition management, and Wimmera Lakes Caravan Park.

**Table 5.3: Estimated Overnight and Day Visitors to Wimmera River at Horsham, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Passive Day Users	Total Participants
2016-17	3,401	7,001	13,510	61,446	78,357
2017-18	2,981	8,086	13,806	62,592	79,370
2018-19	3,625	10,700	14,377	66,564	84,566
% per annum change 2016-17 to 2018-19	3.24%	23.62%	3.16%	4.08%	3.89%



### 5.2.2 Green Lake

Green Lake is a small, attractive lake with a volume of 5,350 megalitres. It is an off-stream reservoir with its own catchment from Diggers Creek and was originally used for irrigation purposes. GWMWater advises that, since construction of the Wimmera Mallee Pipeline, Green Lake is no longer used as a water supply reservoir but plays an important role in managing the water quality within the headworks system.

Green Lake is adjacent to the Western Highway, just 12 kilometres from Horsham. The lake has a long sandy beach, boat ramp, jetty and picnic facilities. The Horsham Yacht Clubhouse is located at Green Lake and runs regattas and events when water levels are suitable. There are no camping facilities at this lake, so most overnight visitors stay in Horsham.

Green Lake is popular for fishing, swimming, boating and windsurfing. In early 2017 a large number of visitors were fishing for yabbies. However, the lake was very quiet throughout the summer and autumn of 2017-18, with blue-green algae infestations declared during the season. This situation was further exacerbated throughout most of 2018-19.



Estimated overnight visitors and day users of Green Lake near Horsham in 2016-17 to 2018-19 are summarised in Table 5.4. These estimates have been developed through interviews on site and in the Horsham business area, online surveys, and discussions with the Horsham Angling Club, and other stakeholders.

**Table 5.4: Estimated Overnight and Day Visitors to Green Lake, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Passive Day Users	Total Participants
2016-17	469	1,631	9,544	0	10,013
2017-18	363	653	3,680	850	4,893
2018-19	110	240	1,000	900	2,010
% per annum change 2016-17 to 2018-19	-51.57%	-61.64%	-67.63%	n.a.	-55.20%

### 5.2.3 Taylors Lake

Taylors Lake is another off-stream reservoir and a reliable water source for the region. It is located 20 kilometres south-east of Horsham and is supplied from upstream storages within the Wimmera-Glenelg headworks. Nearby Potters Creek also serves as a small natural catchment for Taylors Lake. Water can also be harvested into Taylors Lake from the Wimmera River, McKenzie River, Burnt Creek and Mount William Creek.

The lake has an important role in supplying environmental water to the Wimmera River and also a backup reservoir for the WMP supply, should Lake Bellfield be unable to supply WMP, and is very popular with Horsham locals for recreation, especially fishing and water skiing. When other lakes are dry, Taylors Lake will often still have water to enjoy. The lake does not have a formal caravan park/camping ground but camping and campfires are permitted in designated areas.

Estimated overnight visitors and day users of Taylors Lake in 2016-17 to 2018-19 are summarised in Table 5.5. These estimates have been developed through interviews on site and discussions with the Taylors Lake Committee of Management.

**Table 5.5: Estimated Overnight and Day Visitors to Taylors Lake, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Total Participants
2016-17	2,051	6,289	1,612	3,663
2017-18	2,530	7,436	1,515	4,045
2018-19	2,608	11,005	1,585	4,193
% per annum change 2016-17 to 2018-19	12.76%	32.28%	-0.84%	6.99%

#### 5.2.4 Lake Toolondo

Lake Toolondo is an off-stream reservoir, well known for trout fishing and as a popular recreational destination in the Wimmera Southern Mallee region. The lake supply is reliant on transfers from Rocklands Reservoir<sup>18</sup> as per the storage management rules to achieve recreation objectives at Lake Toolondo. The lake is also supplied partially by the small Mt Talbot Creek catchment. The configuration of inlet and outlet structure of Lake Toolondo results in a large volume of 'dead water'. This means that water in Lake Toolondo does not flow through to another source; it can only be pumped out (unless the water level is high enough for gravity release to a channel).

The northern, southern and eastern ends of Lake Toolondo all have a boat ramp, however, these ramps become unusable during periods of drought due to the onset of low water levels. Lake Toolondo is also used by water skiers (when water levels permit) and swimmers.

Fishing activity was not at its peak during 2017-18 nor 2018-19. In particular, there was an absence of "trophy trout" for the enthusiastic sports anglers, although there were good returns for those fishing for redfin during the summer and spring months. Fisheries Victoria advises: *"The stocked trout fishery of Toolondo Reservoir is most productive when, following a period of low water, water levels increase significantly and flood the margins. This creates a trophic upsurge in nutrients, plant-life, insects, fish and other aquatic life that drives feed supply for foraging trout (and redfin). Conversely, when water levels stabilise, fishery productivity falls and stabilises which moderates the performance of the fishery. Over the last few years the growth rates and condition of Toolondo trout has fallen while redfin fishing has remained strong. The presence of carp may also impact on the trout fishery, particularly if carp abundance results in changes to water turbidity"*.

Supplier businesses servicing Lake Toolondo include:

- Wash Tomorrow Caravan Park located at Telangatuk East Road, Toolondo. The park has powered and unpowered sites and there are 11 sites occupied by on-site vans/cabins owned by regular visitors.
- Victorian Inland Fishing Charters, offering day and overnight fishing charters, especially targeting trophy trout.
- 3-4 rental cabins in adjacent privately-owned land (available for visitors making bookings).

<sup>18</sup> GWMWater information



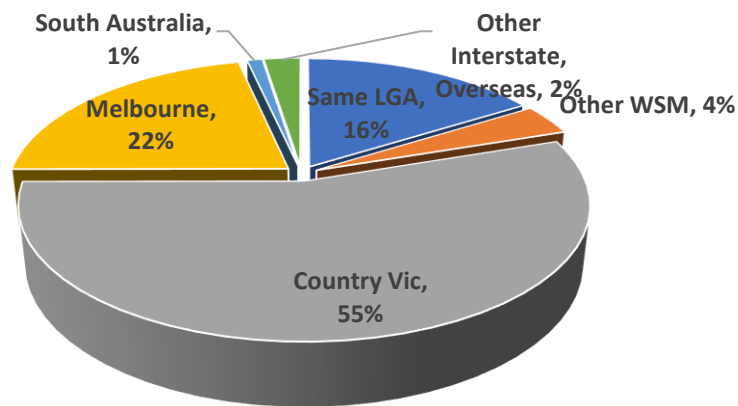
Estimated overnight visitors and day users of Lake Toolondo in 2017-18 and 2018-19 are summarised in Table 5.6. These estimates have been developed through interviews on site and discussions with suppliers to the lake.

**Table 5.6: Estimated Overnight and Day Visitors to Lake Toolondo, 2017-18 to 2018-19**

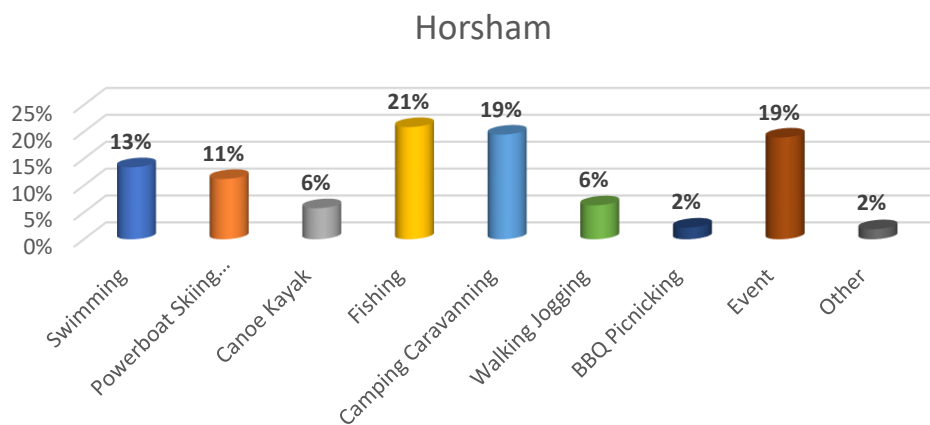
	Overnight Visitors	Total visit nights	Active Day Users	Total Participants
2017-18	1,741	4,250	1,599	3,340
2018-19	670	2,099	1,050	1,720
% change 2017-18 to 2018-19	-61.52%	-50.60%	-34.33%	-48.50%

### 5.3 ECONOMIC CONTRIBUTION

Figure 5.1 shows 20% of recreational water users at Horsham Rural City sites were Wimmera Southern Mallee residents in 2018-19, and a further 55% were from other parts of country Victoria. Melbourne metropolitan visitation was also high, at 22%, while interstate and overseas visitors made up a total of 3% of visitation.

**Figure 5.1 Residential Location of Recreational Water Users, Horsham Rural City**

Relative participation in recreational activities at Horsham lakes and weirs in 2018-19 (during November 2018 to April 2019) is shown in Figure 5.2.

**Figure 5.2 Recreational Activities at Horsham Lakes and Weirs, 2018-19**

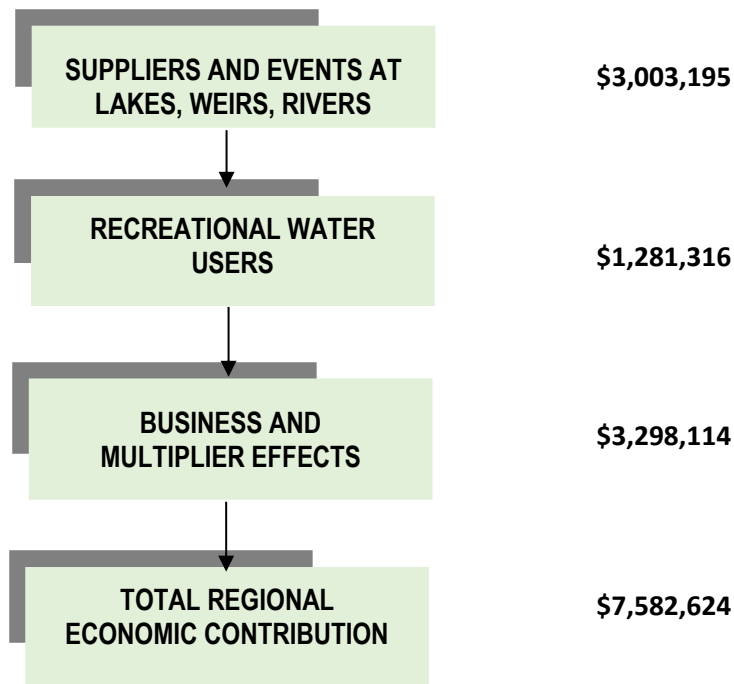
Tables 5.8 and 5.9 and Figure 5.3 detail the estimated 2018-19 economic contribution of the assessed recreational water facilities in the Horsham Rural City.

**Table 5.8: Estimated Economic Contribution 2018-19: Recreational Water Facility Users**

	Total Overnight Visitors	Total Visit Nights	Active Day Visitors	Passive Day Visitors	Total Participation	% Change on 2017-18
Wimmera River - Horsham	3,625	10,700	14,377	66,564	84,566	6.53%
Green Lake	110	240	1,000	900	2,010	-58.92%
Taylors Lake	2,608	11,005	1,585	n.a.	4,193	3.66%
Toolondo	670	2,099	1,050	n.a.	1,720	-48.50%
<b>Total Horsham</b>	<b>7,013</b>	<b>24,044</b>	<b>18,012</b>	<b>67,464</b>	<b>92,489</b>	<b>0.91%</b>
<b>Visitor Expenditure (\$)</b>						
Wimmera River - Horsham		\$506,886	\$210,311	\$186,378	\$903,575	10.75%
Green Lake		\$4,300	\$14,000	\$2,610	\$20,910	-79.33%
Taylors Lake		\$201,820	\$36,229	n.a.	\$238,048	-13.74%
Toolondo		\$88,887	\$29,896	n.a.	\$118,783	-45.25%
<b>Total Horsham Rural City</b>		<b>\$801,893</b>	<b>\$290,436</b>	<b>\$188,988</b>	<b>\$1,281,316</b>	<b>-9.13%</b>

**Table 5.8: Estimated Economic Contribution 2018-19: Supplier Organisations**

<b>Suppliers: Direct</b>	
Caravan Parks/Committees of Management	\$283,702
Events and Other Businesses	\$105,000
Statutory Agencies <sup>19</sup>	\$2,614,493
<b>Total Horsham Rural City</b>	<b>\$3,003,195</b>

**Figure 5.3 2018-19 Estimated Recreational Water Regional Economic Contribution: Horsham Rural City**<sup>19</sup> These agencies include Wimmera CMA, GWM Water, and Fisheries Victoria



## 6. RECREATIONAL WATER FACILITIES IN NORTHERN GRAMPIANS SHIRE

### 6.1 OVERVIEW

Northern Grampians is at the eastern end of the Wimmera Southern Mallee region. Its major centres are Stawell in the south (just off the Western Highway) and St Arnaud in the north (on the Sunraysia Highway). Smaller centres include Great Western, Halls Gap, Glenorchy, Navarre, Marnoo and Stuart Mill. Stawell and St Arnaud are both service centres for their surrounding rural communities.

The population of Northern Grampians is 11,431<sup>20</sup>, having declined at 0.7% in the past year. It is the second most populous municipality in the region and most of the population live in the southern part of the Shire.

The structure of Northern Grampians economy is quite different from the remainder of the region. There is a history of gold mining and, while agriculture and agricultural product processing are key industries, it has a diversity of agricultural enterprises including the more traditional dryland pursuits of wool, broad acre grazing and cereal cropping, but also significant horticultural sectors (wine, olives and emerging hydroponics). Health services (16.0% of all jobs), agriculture (13.1%) and manufacturing (11.1%) are the Shire's largest employing industries.

Tourism is very a significant industry for the Shire, particularly in the south associated with the Grampians National Park. This is also the location of four of the assessed recreational water facilities in the Shire, with only Walkers Lake in the northern part of the Shire.

Some Northern Grampians Shire towns have high levels of socio-economic disadvantage, the two largest, Stawell and St Arnaud being the most significant. Table 6.1 shows the SEIFA rankings of the five 'suburbs' compared with all those in Victoria, revealing:

- St Arnaud is the most disadvantaged, ranking 90<sup>th</sup> of all 2,672 suburbs in the State.
- Stawell is the next most disadvantaged, ranking 96<sup>th</sup>
- Other towns near the recreational water sites rank in the 'more advantaged' percentiles: Moyston and Halls Gap (near Lake Fyans and Lake Bellfield) ranking around the middle of all suburbs, and Marnoo (near Walkers Lake) ranking 2035<sup>th</sup>.

**Table 6.1: SEIFA Indices for Northern Grampians Shire Suburbs, 2016**

	Usual Resident Population		Ranking within Victoria			Minimum score for SA1s in area	Maximum score for SA1s in area
		Score	Rank	Decile	Percentile		
Halls Gap	430	1006	1405	6	53	998	1011
Marnoo	122	1038	2035	8	77	1038	1038
Moyston	348	999	1224	5	46	999	999
St Arnaud	2,193	892	90	1	4	854	988
Stawell	6,032	894	96	1	4	837	981

Note: The SEIFA Index used in this table relates to Socio-Economic Advantage and Disadvantage.

The Australian Bureau of Statistics broadly defines relative socioeconomic advantage and disadvantage in terms of people's *access to material and social resources, and their ability to participate in society*. There are 2,672 state suburbs in Victoria. A score of 1,000 or above tends to indicate an area which is relatively advantaged, and a score below 1,000 is an area which is relatively disadvantaged. In any of the Wimmera Southern Mallee 'suburbs' there are likely to be pockets which are relatively more advantaged and disadvantaged than the suburb as a whole. The minimum and maximum scores for these smaller pockets (shown as SA1s, Statistical Area 1s) are presented in the final two columns of the table.

<sup>20</sup> ABS, Regional Population Growth 2018 (March 2019)

Fisheries Victoria has stocked 306,856 fingerlings and advanced stocker fish in the selected lakes in Northern Grampians Shire (except Lake Lonsdale) during the three-year period including 2018-19<sup>21</sup>. The fish stocking in this Shire is the only one in WSM region where introduced (trout) species are in the majority. Details of the number and species of stockings over this period is summarised in Table 6.2.

**Table 6.2 Fish Released in Northern Grampians Shire Selected Lakes 2016-2019**

Units stocked (fingerlings and/or advanced stockers)	Brown Trout	Rainbow Trout	Murray Cod	Golden Perch	Silver Perch	Total
<b>Northern Grampians Shire</b>						
Lake Bellfield	5,000	50,129		110,000		165,129
Lake Fyans	25,000	20,727				45,727
Lake Wartook	21,000	35,000				56,000
Walkers Lake				20,000	20,000	40,000

## 6.2 SELECTED RECREATIONAL WATER FACILITIES

### 6.2.1 Lake Bellfield

Lake Bellfield is located in the eastern Grampians Ranges near Halls Gap. Lake Bellfield is the main source of water supply for the Wimmera Mallee Pipeline system, supplies water to Halls Gap and Pomonal and also transfers water to Lake Fyans. The lake is used for recreational activities such as boating, fishing and picnicking. Combustion engine boats are not permitted on Lake Bellfield.

Lake Bellfield is located in the Halls Gap urban area. Therefore, accommodation is available at several premises throughout Halls Gap. The Lakeside Tourist Park is a major facility and is adjacent to the lake, although below the dam wall. A small proportion of overnight visitors at the Tourist Park are lake users. Most water uses are low impact, such as fishing, canoeing, kayaking and picnics on the banks.

Estimated overnight visitors and day trip users of Lake Bellfield in 2016-17 to 2018-19 are summarised in Table 6.3. These estimates have been developed through interviews on site, discussions with the Halls Gap Lakeside Tourist Park management, and fishing enthusiasts.

**Table 6.3: Estimated Overnight and Day Visitors to Lake Bellfield, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Passive Day Users	Total Participants
2016-17	1,177	4,453	2,173	14,842	18,192
2017-18	1,786	5,061	2,355	14,660	18,801
2018-19	1,815	7,417	2,650	14,566	19,032
% per annum change 2016-17 to 2018-19	24.20%	29.06%	10.43%	-0.93%	2.28%

<sup>21</sup> Stocking fish in recreational waterways is considered similar to providing an asset, for which there will be a return on investment over three years.



### 6.2.2 Lake Lonsdale

Lake Lonsdale is a large, shallow water reservoir on Mount William Creek. It fills from its own catchment and is reliant on natural inflows. Although the catchment can be a substantial producer of water during wet years, it covers a very large area and is not reliable during dry years. As a lake with relatively shallow depth, it has high evaporation losses over summer months.

Since the introduction of the Wimmera Mallee Pipeline, the lake is rarely used by GWMWater for domestic or stock water supply, however it remains a key source of water for the environment. Lake Lonsdale is important to the surrounding communities, especially Stawell, as a recreational lake offering fishing, yabbying, boating, swimming, camping and water skiing. The surrounding land provides opportunity for trekking, hiking and wildlife watching. Camping is available at four designated camping areas along the lake. During 2018-19 the lake fell below 20% water level.



Estimated overnight visitors and day trip users of Lake Lonsdale in 2016-17 to 2018-19 are summarised in Table 6.4. These estimates have been developed through interviews on site and discussions with Lake Lonsdale stakeholders.

**Table 6.4: Estimated Overnight and Day Visitors to Lake Lonsdale, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Passive Day Users	Total Participants
2016-17	469	1,995	1,500	5,000	6,969
2017-18	314	1,980	1,280	4,780	6,374
2018-19	173	819	655	3,875	4,703
% per annum change 2016-17 to 2018-19	-39.27%	-35.92%	-33.90%	-11.97%	-17.85%

### 6.2.3 Lake Wartook

Lake Wartook is an important water resource in the region. It is the primary water source for Horsham and Natimuk, and an important resource for “Supply System 6” of the Wimmera Mallee Pipeline. The lake also provides substantial environmental flows.

Located on the MacKenzie River in the central Grampians, Lake Wartook is popular with locals, particularly for fishing with trout as the target species. Around 15,000 rainbow and brown trout are stocked in the lake each year.

Horsham Angling Club has a lodge located on the foreshore of Lake Wartook, and this is the main accommodation facility. The club has 300 to 400 fishing members, not all of whom are active. Many of the members join specifically to access the club’s lodge facilities at Wartook and Rocklands Reservoir.



Estimated overnight visitors and day trip users of Lake Wartook in 2016-17 to 2018-19 are summarised in Table 6.5. These estimates have been developed through interviews on site and discussions with the Horsham Angling Club (Wartook Lodge operators).

**Table 6.5: Estimated Overnight and Day Visitors to Lake Wartook, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Passive Day Users	Total Participants
2016-17	641	3,938	660	0	1,301
2017-18	221	741	615	1,100	1,936
2018-19	287	893	670	1,000	1,957
% per annum change 2016-17 to 2018-19	-33.09%	-52.37%	0.75%	-9.09%	22.65%

#### 6.2.4 Lake Fyans

Lake Fyans is part of the GMMWater headworks reservoir supply system. Lake Fyans has a small natural catchment and it relies on water transfers from Lake Bellfield to fulfil its role in providing water supply to the towns of Ararat, Stawell and Great Western and to some 'supply by agreement' customers of GMMWater.

The lake is one of the most important recreational lakes in the region. It hosts a number of activities including sailing, jet skiing, hunting and caravanning, and is the base for:

- Lake Fyans Holiday Park which is the largest accommodation facility dedicated to servicing any of the 25 selected recreational water facilities in the Wimmera Southern Mallee. The Holiday Park has 20 cabins, 120 powered sites, 200 unpowered sites, and associated resort facilities.
- Stawell Yacht Club which organises regular sailing races and learn to sail programs (tackers).
- Scouts Victoria's Lake Fyans Scout Camp on 10 hectares a of bushland at the edge of Lake Fyans. The camp has 100 patrol camp sites, a campfire circle, disabled access shelter and storm hut, and a self-contained kitchen. It provides canoeing, games room, hiking and bush walking, and water activities. There is also a lodge accommodating up to 40 people.



A new walking track at Lake Fyans was opened in 2017-18. The project has developed a 9.6 kilometres walking track around the southern perimeter of Lake Fyans, with fencing, shade shelters, upgraded and new toilets, signage, nature trails and bird trails. It will better connect the recreational, cultural and natural heritage of the lake surrounding Lake Fyans Holiday Park. Splinter tracks off the main trail encourage walkers to explore the diverse plant life, observe fauna activity and to preserve local cultural heritage. The project complements the Grampians Peaks Trail project by promoting the greater region as a place to enjoy the nature and beauty of the Grampians by foot and bicycle. This development was expected to add around 15% to the visitation numbers at the lake.



Estimated overnight visitors and day trip users of Lake Fyans in 2016-17 to 2018-19 are summarised in Table 6.6. These estimates have been developed through interviews on site and discussions with the Lake Fyans Holiday Park, and GWM Water (having replaced the Lake Fyans Committee of Management).

**Table 6.6: Estimated Overnight and Day Visitors to Lake Fyans, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Passive Day Users	Total Participants
2016-17	21,649	66,456	2,681	3,485	27,815
2017-18	23,385	78,613	2,768	3,415	29,569
2018-19	22,223	79,336	2,799	3,420	28,442
% per annum change 2016-17 to 2018-19	1.32%	9.26%	2.18%	-0.94%	1.12%

### 6.2.5 Walkers Lake

Walkers Lake is located at Avon Plains, with the nearest Wimmera Southern Mallee towns being Donald, St Arnaud, Marnoo, Rupanyup and Minyip. The lake is overseen by a Committee of Management and is open for camping (with some toilet facilities).

Walkers Lake has a basin volume of 900 megalitres. Annual 'top-up' volume from the Wimmera Mallee Pipeline meets the evaporation and seepage losses and is supplemented by natural runoff in wetter periods. The pipeline supply is delivered at a heavily subsidised rate per megalitre which reflects the engagement undertaken by GWMWater with its customer base in development of pricing submissions. When full, it covers an area of around 27 hectares.

There are no specific clubs or organisations making regular use of facilities at Walkers Lake, but a few host events at the lake from time to time, for example the St Arnaud Anglers Club.



Estimated overnight visitors and day trip users of Walkers Lake in 2016-17 to 2018-19 are summarised in Table 6.7. These estimates have been developed through interviews on site and discussions with the Committee of Management.

**Table 6.7: Estimated Overnight and Day Visitors to Walkers Lake, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Total Participants
2016-17	768	3,101	1,430	2,198
2017-18	1,225	4,112	1,494	2,719
2018-19	1,256	6,040	1,540	2,796
% per annum change 2016-17 to 2018-19	27.86%	39.56%	3.79%	12.78%

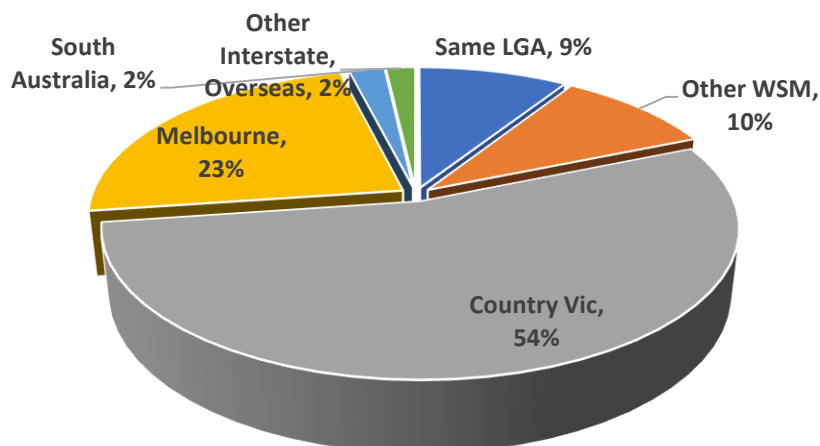




### 6.3 ECONOMIC CONTRIBUTION

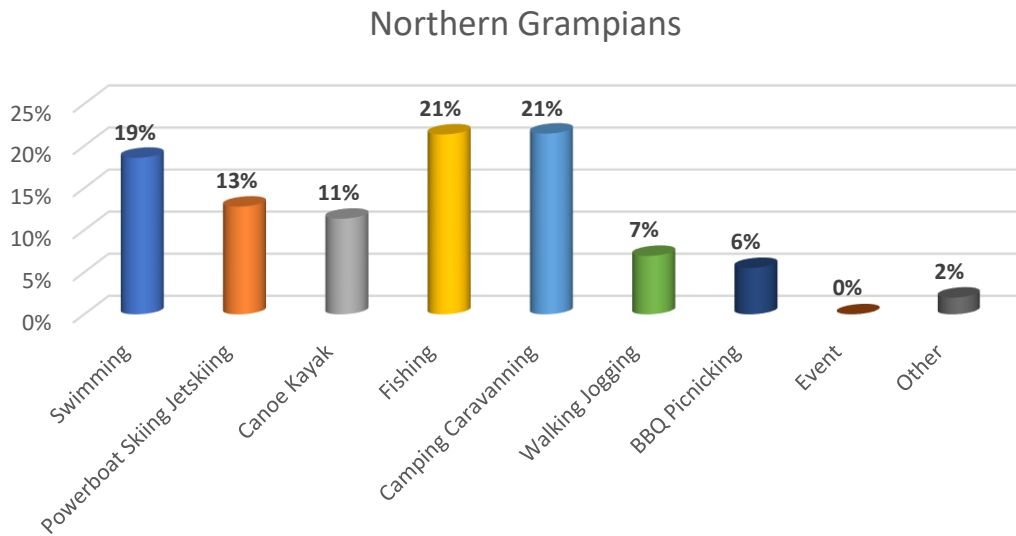
Figure 6.1 shows 19% of recreational water users at Northern Grampians Shire sites were Wimmera Southern Mallee residents in 2018-19, and a further 54% were from other parts of country Victoria. Melbourne metropolitan visitation is high at 23%, while interstate and overseas visitors made up 4% of visitation.

**Figure 6.1 Residential Location of Recreational Water Users, Northern Grampians Shire**



Relative participation in recreational activities at Northern Grampians lakes and weirs in 2018-19 (during November 2018 to April 2019) is shown in Figure 6.2.

**Figure 6.2 Recreational Activities at Northern Grampians Lakes and Weirs, 2018-19**



Tables 6.8 and 6.9 and Figure 6.3 detail the estimated 2018-19 economic contribution of the assessed recreational water facilities in Northern Grampians Shire.

**Table 6.8: Estimated Economic Contribution 2018-19: Recreational Water Facility Users**

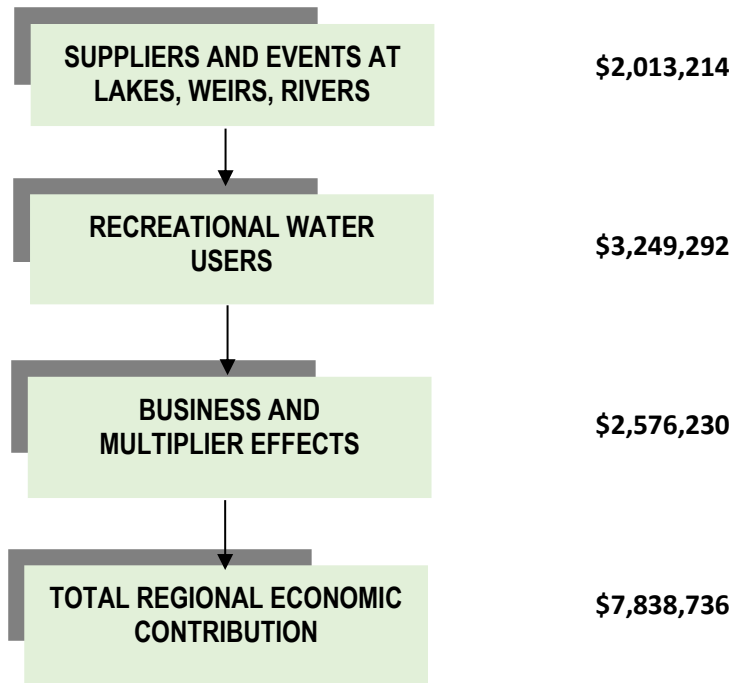
	Total Overnight Visitors	Total Visit Nights	Active Day Visitors	Passive Day Visitors	Total Participation	% Change on 2017-18
<b>Visitation and Participation</b>						
Lake Bellfield	1,815	7,417	2,650	14,566	19,032	-2.63%
Lake Fyans	22,223	79,336	2,799	3,420	28,442	-3.81%
Lake Lonsdale	173	819	655	3,875	4,703	-26.21%
Walkers Lake	1,256	6,040	1,540	n.a.	2,796	2.83%
Lake Wartook	287	893	670	1,000	1,957	1.08%
<b>Total Northern Grampians</b>	<b>25,754</b>	<b>94,506</b>	<b>8,315</b>	<b>22,861</b>	<b>56,930</b>	<b>-5.34%</b>
<b>Visitor Expenditure (\$)</b>						
Lake Bellfield		\$300,330	\$43,364	\$45,155	\$388,849	35.00%
Lake Fyans		\$2,564,936	\$37,320	\$12,996	\$2,615,252	-7.14%
Lake Lonsdale		\$19,157	\$13,107	\$10,269	\$42,533	-47.41%
Walkers Lake		\$133,654	\$33,524	n.a.	\$167,179	0.40%
Lake Wartook		\$21,692	\$10,888	\$2,900	\$35,480	45.87%
<b>Total Northern Grampians</b>		<b>\$3,039,770</b>	<b>\$138,203</b>	<b>\$71,320</b>	<b>\$3,249,292</b>	<b>-3.76%</b>

**Table 6.9: Estimated Economic Contribution 2018-19: Supplier Organisations**

<b>Suppliers: Direct</b>	
Caravan Parks/Committees of Management	\$1,030,214
Events and Other Businesses	\$171,575
Statutory Agencies <sup>22</sup>	\$811,425
<b>Total Northern Grampians Shire</b>	<b>\$2,013,214</b>

<sup>22</sup> Statutory agencies include Fisheries Victoria, Wimmera CMA and GWM Water

**Figure 6.3 2018-19 Estimated Recreational Water Regional Economic Contribution: Northern Grampians Shire**



## 7. RECREATIONAL WATER FACILITIES IN WEST WIMMERA SHIRE

### 7.1 OVERVIEW

As the name implies, West Wimmera is at the western edge of the Wimmera Southern Mallee region adjoining the South Australian border. Its largest townships are Edenhope (on the Wimmera Highway) and Kaniva (on the Western Highway).

West Wimmera is the smallest of the region's LGAs in terms of population and the largest in area and has the lowest density of population of all LGAs in Victoria. At June 2018, West Wimmera had a population of 3,862<sup>23</sup>. Its population has been declining over many years with the rate of decline slightly slowing. In the past year the rate of decline was 0.8%.

The major industry in the Shire is agriculture, encompassing grains, small seeds, wool, beef, pork, olives, vegetables, timber and hay. It contributes 44.0% of jobs in the Shire, although the number of jobs in agriculture has been decreasing at 2.1% per annum. It also has a sizeable transport cartage industry, primarily associated with the agricultural resource base. Health care and social assistance has become the second largest employing industry in the Shire over the past two decades to 2016; now 12.4% of all jobs and increasing at 0.3% per annum (at a time when total jobs have been decreasing by 1.4% per annum). Edenhope's hospital and aged care facilities are located on the foreshore of Lake Wallace.

Some West Wimmera Shire towns have high levels of socio-economic disadvantage, with Goroke and Minimay being exceptions. Table 4.1 shows the SEIFA rankings of the five 'suburbs' compared with all those in Victoria, revealing:

- Edenhope is the most disadvantaged, ranking 171<sup>st</sup> of all 1,516 suburbs in the State.
- Apsley ranking 317<sup>th</sup>
- Kaniva ranking 351<sup>st</sup>
- Goroke ranking 530<sup>th</sup>
- Minimay ranking quite highly at 1,173<sup>rd</sup> and in more advantaged 20% of suburbs.

**Table 7.1: SEIFA Indices for West Wimmera Shire Suburbs, 2016**

	Usual Resident Population		Ranking within Victoria			Minimum score for SA1s in area	Maximum score for SA1s in area
		Score	Rank	Decile	Percentile		
<b>Apsley</b>	277	936	324	2	13	936	936
<b>Edenhope</b>	946	937	332	2	13	902	1016
<b>Goroke</b>	299	915	200	1	8	866	1051
<b>Kaniva</b>	803	975	775	3	29	927	1032
<b>Minimay</b>	84	1049	2194	9	83	1049	1049

Note: The SEIFA Index used in this table relates to Socio-Economic Advantage and Disadvantage.

The Australian Bureau of Statistics broadly defines relative socioeconomic advantage and disadvantage in terms of people's *access to material and social resources, and their ability to participate in society*. There are 2,672 state suburbs in Victoria. A score of 1,000 or above tends to indicate an area which is relatively advantaged, and a score below 1,000 is an area which is relatively disadvantaged. In any of the Wimmera Southern Mallee 'suburbs' there are likely to be pockets which are relatively more advantaged and disadvantaged than the suburb as a whole. The minimum and maximum scores for these smaller pockets (shown as SA1s, Statistical Area 1s) are presented in the final two columns of the table.

<sup>23</sup> ABS, Regional Population Growth 2018 (March 2019)

Fisheries Victoria has stocked 67,936 fingerlings and advanced stocker fish in the selected lakes in West Wimmera Shire during the three-year period including 2018-19<sup>24</sup>. Each Lake features different species: Trout in Lake Wallace, Murray cod at Charlegrark, and golden perch at Ratzcastle. Details of the number and species of stockings over this period is summarised in Table 7.2.

**Table 7.2 Fish Released in West Wimmera Shire Selected Lakes 2016-2019**

Units stocked (fingerlings and/or advanced stockers)	Brown Trout	Rainbow Trout	Murray Cod	Golden Perch	Total
<b>West Wimmera Shire</b>					
Lake Charlegrark			30,359		30,359
Lake Bringalbert				16,000	16,000
Lake Ratzcastle				16,000	16,000
Lake Wallace	6,015	15,562			21,577

## 7.2 SELECTED RECREATIONAL WATER FACILITIES

### 7.2.1 Lake Wallace

Lake Wallace is a freshwater lake located in the Edenhope urban area. The lake was named in 1845 after the first European visitor to the region, William Wallace; reportedly a direct descendant Sir William Wallace, a Scottish knight and leader during the thirteenth century Wars of Scottish Independence. In 1866, the banks of the lake became the main training area for the Aboriginal cricket team that later became the first Australian team to tour England in 1868, with star allrounder and local identity Johnny Mullagh and captain/coach Tom Wills.

Lake Wallace has been known for great fishing from bank or boat and is stocked with trout, and also contains redfin. It was stocked with advanced yearlings (4,000 rainbow and 1,000 brown trout) following the filling rains of 2016, from Fisheries Victoria's Snob's Creek hatchery. However, the fish from these stockings had not achieved sufficient growth in the Summer and Autumn of 2017 to provide angling sport for visitors: This had changed by 2018.

Residents of Edenhope overwhelmingly believe that Lake Wallace is one of, if not the, key physical asset in the community, and is the town's lifeblood. Many residents regularly visit, walk, run and picnic around the lake's foreshore.

<sup>24</sup> Stocking fish in recreational waterways is considered similar to providing an asset, for which there will be a return on investment over three years.



The prominence of Lake Wallace in Edenhope means that it has a direct effect on amenity, liveability, business activity, and even real estate values around its perimeter. Although on a much smaller scale, this effect is similar to the suburbs which surround Lake Wendouree in Ballarat. Following drought conditions, Lake Wallace was empty until late in 2016.

Increased confidence in water levels in Lake Wallace encouraged the community to run additional events during 2017-18 and 2018-19, increasing the number of recreational users considerably. A good growth rate from stocked trout, the Edenhope Fishing Competition in the first week of November, and a 'tagged fish' competition also attracted recreational fishers. There was an outbreak of blue-green algae late in 2018.



Estimated overnight visitors and day trip users of Lake Wallace at Edenhope in 2016-17 to 2018-19 are summarised in Table 7.3. These estimates have been developed through interviews on site, data and discussions with Edenhope community organisations, and discussions with the Edenhope Lakeside Tourist Park management.

**Table 7.3: Estimated Overnight and Day Visitors to Lake Wallace, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Passive Day Users	Total Participants
2016-17	4,481	19,834	2,038	9,842	16,361
2017-18	5,557	20,783	2,465	9,860	17,882
2018-19	6,018	25,870	3,435	9,868	19,321
% per annum change 2016-17 to 2018-19	15.89%	14.21%	29.83%	0.13%	8.67%

### 7.2.3 Lake Charlegrark

Lake Charlegrark is a natural lake located between Kaniva and Edenhope. The nearest township is Goroke and the small community of Minimay is just 3 kilometres to the north-west. Lake Charlegrark has only been dry twice in history; from 1870 to 1877 (8 years) and then 2005 to 2009. The Lake has a depth of 3.5 to 5 metres.

Fish were first stocked in Lake Charlegrark in the 1950s, all Murray cod. The largest caught in recent years (2-3) has been 82 cm. There have been 20,000 fingerlings released in the past three years. The lake also contains a few redfin, but there is not a problem with carp infestation at Charlegrark.

This lake is popular for water skiing and fishing during holiday periods over warmer months. Families are attracted to the camping ground where there are powered facilities, a shower block and barbecue area. Camp fees are \$7.00 per person (free for children under 12 years). Powered sites are \$25. There are also self-contained cottages and a house available for bookings.

There is private boutique style accommodation on the eastern side of the lake (opposite the main camping and caravan park) and a lodge (Langley Lodge) about 3 kilometres from the lake and suitable for large groups, functions and worker accommodation.

Regular maintenance works and small capital improvements are made by the Foreshore Committee. In the 2016-17 year this included installation of 2 new electric barbecues in Crabtree Hall (the functions facility) within the reserve, upgrading of navigational aids on the lake, a solar panel for Crabtree Hall, and new water pumps. In 2017-18 an upgrade to three phase power and construction of an all-abilities amenities block has been undertaken, together with upgrades to barbecue and seating areas. The full capital works costs were \$789,000 with several contributors.



An on-site catering business, Charlie's Diner commenced in 2016-17 and traded Friday to Sunday throughout the summer school holidays and long weekends and through October to April on-demand. The Diner offers light meals, snacks and beverages to campers and other lake visitors. A second on-site food van 'Café La Demi' commenced operations over the 2017-18 summer season.

Events held at Lake Charlegrark throughout the year are:

- Lake Charlegrark Country Music Marathon held in February
- Youth Art @ Charlegrark held in March
- Fishing competitions (hosted by several local fishing clubs: Neuarpurr Angling Club, Edenhope Angling Club, Apsley Angling Club, and Wimmera Anglers).
- A range of sporting functions and training sessions, family days and community activities.



Estimated overnight visitors and day trip users of Lake Charlegrark in 2016-17 to 2018-19 are summarised in Table 7.4. These estimates have been developed through interviews on site and discussions with the Lake Charlegrark foreshore management.

**Table 7.4: Estimated Overnight and Day Visitors to Lake Charlegrark, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Total Participants
2016-17	1,697	6,873	2,215	3,912
2017-18	1,745	7,776	2,200	3,945
2018-19	1,467	7,792	2,400	3,867
% per annum change 2016-17 to 2018-19	-7.01%	6.47%	4.09%	-0.57%

### 7.2.3 Lake Ratzcastle

Lake Ratzcastle is located 10 kilometres south of Goroke on the Goroke-Harrow Road. When full the lake covers a surface area of around 14 hectares. The lake only fills on a seasonal basis but is an iconic wetland. The lake and its environs are understood to have significant Aboriginal cultural heritage values.

Camping is permitted at Lake Ratzcastle, at a good selection of unpowered sites, but there are no booking arrangements or camping fees. Access to the camping area is along 2 kilometres of unsealed road. Picnic facilities for day visitors are available, including barbecues and picnic tables. Flush toilets and a solar-heated shower are provided. No drinking water is supplied, although there is limited unpotable water at the on-site rainwater tanks.

The lake foreshore is well maintained by the Goroke Lions Club.



Estimated overnight visitors and day trip users of Lake Ratzcastle in 2018-19 are summarised in Table 7.5. These estimates have been developed through interviews on site and discussions with the Lake Ratzcastle Committee/Lions Club.

**Table 7.5: Estimated Overnight and Day Visitors to Lake Ratzcastle, 2017-18 to 2018-19**

	<b>Overnight Visitors</b>	<b>Total visit nights</b>	<b>Active Day Users</b>	<b>Total Participants</b>
2017-18	1,653	6,265	1,150	2,803
2018-19	1,537	6,641	1,100	2,637
% pa change 2017-18 to 2018-19	-7.02%	6.00%	-4.35%	-5.92%

#### 7.2.4 Lake Bringalbert

Lake Bringalbert was included in the lakes and weirs assessment for the first time in 2018-19. The lake is particularly popular with visitors from country South Australia who make almost 85% of recreational users. The lake is just 18 minutes' drive from the border with South Australia.

Estimated overnight visitors and day trip users of Lake Bringalbert in 2018-19 are summarised in Table 7.6. These estimates have been developed through interviews on site and discussions with the Committee of Management.

**Table 7.6: Estimated Overnight and Day Visitors to Lake Bringalbert Reservoir 2018-19**

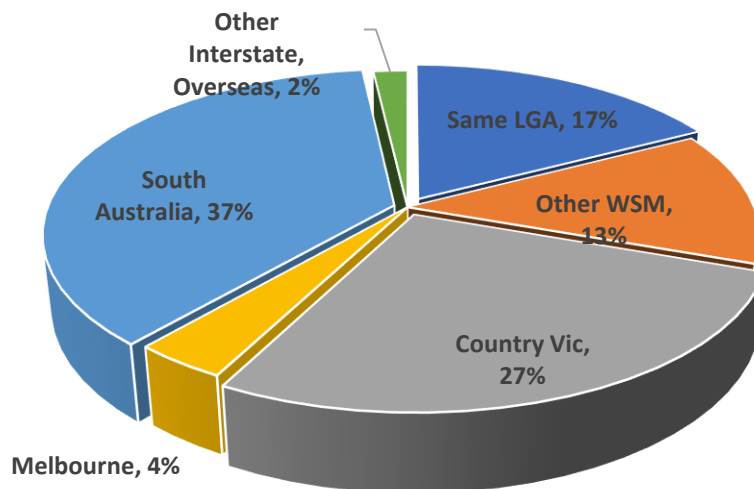
	<b>Overnight Visitors</b>	<b>Total visit nights</b>	<b>Active Day Users</b>	<b>Total Participants</b>
2018-19	743	3,046	1,750	2,493



### 7.3 ECONOMIC CONTRIBUTION

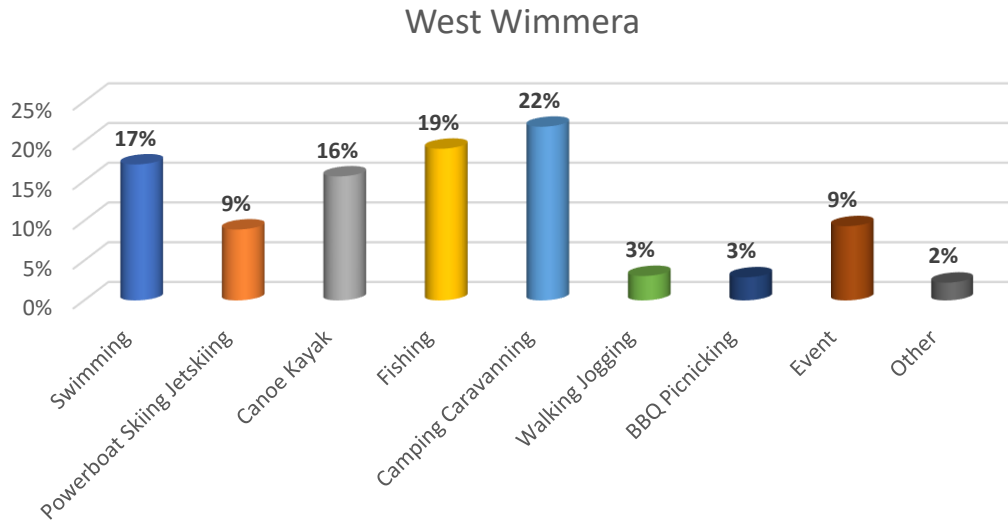
Figure 7.1 shows 30% of recreational water users at West Wimmera Shire sites were Wimmera Southern Mallee residents in 2018-19, and a further 27% were from other parts of country Victoria. Melbourne metropolitan visitation was just 4%, while interstate and overseas visitors made up 39% of visitation (overwhelmingly from South Australia). The substantial increase in South Australian participants is linked to the inclusion of Lake Bringalbert, adjacent to the border, in the 2018-19 assessment.

**Figure 7.1 Residential Location of Recreational Water Users, West Wimmera Shire**



Relative participation in recreational activities at West Wimmera lakes and weirs in 2018-19 (during November 2018 to April 2019) is shown in Figure 7.2.

**Figure 7.2 Recreational Activities at West Wimmera Lakes and Weirs, 2018-19**



Tables 7.7 and 7.8 and Figure 7.3 detail the estimated 2018-19 economic contribution of the assessed recreational water facilities in West Wimmera Shire.

**Table 7.7: Estimated Economic Contribution 2018-19: Recreational Water Facility Users**

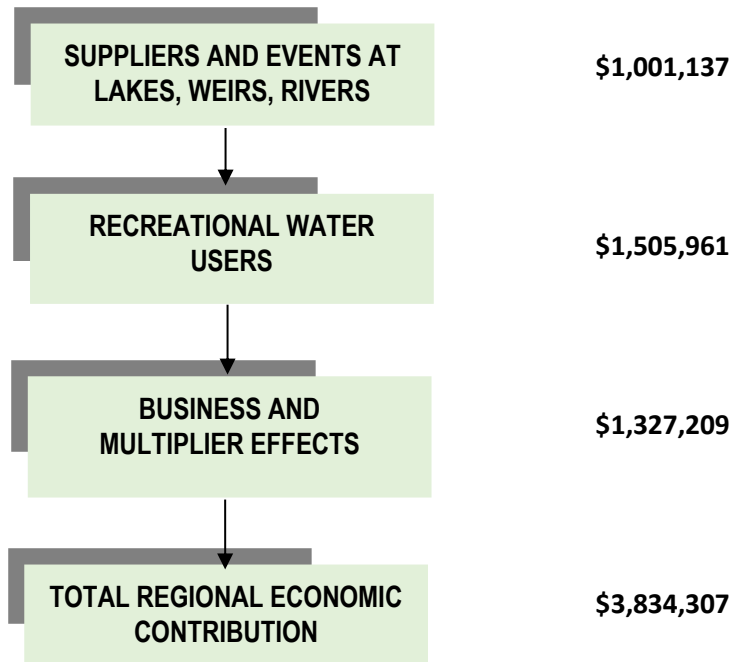
	Total Overnight Visitors	Total Visit Nights	Active Day Visitors	Passive Day Visitors	Total Participation	% Change on 2017-18
<b>Visitation and Participation</b>						
Lake Charlegrark	1,467	7,792	2,400	n.a.	3,867	-1.97%
Lake Ratzcastle	1,537	6,641	1,100	n.a.	2,637	-5.92%
Lake Bringalbert	743	3,046	1,750	n.a.	2,493	n.a.
Lake Wallace	6,018	25,870	3,435	9,868	19,321	8.05%
<b>Total West Wimmera</b>	<b>9,765</b>	<b>43,348</b>	<b>8,685</b>	<b>9,868</b>	<b>28,318</b>	<b>14.97%</b>
<b>Visitor Expenditure (\$)</b>						
Lake Charlegrark		\$198,896	\$36,706	n.a.	\$235,602	-11.24%
Lake Ratzcastle		\$148,624	\$11,000	n.a.	\$159,624	-21.83%
Lake Bringalbert		\$65,736	\$32,407	n.a.	\$98,143	n.a.
Lake Wallace		\$887,458	\$89,609	\$35,525	\$1,012,592	20.49%
<b>Total West Wimmera</b>		<b>\$1,300,714</b>	<b>\$169,722</b>	<b>\$35,525</b>	<b>\$1,505,961</b>	<b>14.95%</b>

**Table 7.8: Estimated Economic Contribution 2018-19: Supplier Organisations**

Suppliers: Direct	
Caravan Parks/Committees of Management	\$311,742
Events and Other Businesses	\$251,305
Statutory Agencies <sup>25</sup>	\$438,090
<b>Total West Wimmera Shire</b>	<b>\$1,001,137</b>

<sup>25</sup> Statutory agencies include Fisheries Victoria, Wimmera CMA and GWM Water

**Figure 7.3 2018-19 Estimated Recreational Water Economic Contribution: West Wimmera Shire**



## 8. RECREATIONAL WATER FACILITIES IN YARRIAMBIACK SHIRE

### 8.1 OVERVIEW

Yarriambiack Shire is in the north east of the Wimmera Southern Mallee region. The north of the Shire is characterised by the dunes of the Lowan Mallee and sandy plains of the Mallee, while the south of the Shire is part of the undulating plains of the Wimmera. Warracknabeal is the largest township in the Shire, followed by Murtoa, Hopetoun, Minyip, Rupanyup and Beulah. Warracknabeal is centrally located in the Shire; 57 kilometres north of Horsham and around 350 kilometres north east of Melbourne.

The Shire economy is highly dependent on broadacre farming and so are the Shire's urban centres, which have economies that have built their business bases to contribute to agribusiness supply chains and to provide services to farming communities. The agricultural activity is dominated by wheat, barley, lambs and wool, grain legumes, and oilseeds. This agricultural focus has given the Shire and its towns many distinctive features, strong resilience and connected communities, but it has also led to decades long population decline as farms have become bigger and more automated, and the financial returns from agricultural commodities have continued to decline in an increasingly competitive global environment. In 2016, agriculture contributed 27.5% of all jobs in the Shire, with health care and social services being the second largest employing industry (19.8% of jobs).

Tourism is an emerging sector in Yarriambiack in the past few years, as the Shire which pioneered the concept of an art silo trail. This tourism stimulus is having a flow-on effect to other local attractions such as the lakes and weir pools, annual events, and historic attractions (such as the 'stick shed' and agricultural machinery museums).

The resident population of Yarriambiack Shire has been decreasing by an annual average of 1.2% over the past decade. In 2018, the population was 6,658 (having declined by 0.4% in the past year)<sup>26</sup>.

Yarriambiack towns have high levels of socio-economic disadvantage. Table 8.1 shows the SEIFA rankings of the eight 'suburbs' compared with all those in Victoria, revealing:

- Minyip is the most disadvantaged, ranking 145<sup>th</sup> of all 1,516 suburbs in the State.
- Warracknabeal ranking 161<sup>st</sup>
- Murtoa ranking 225<sup>th</sup>
- Hopetoun ranking 264<sup>th</sup>
- Brim and Beulah ranking 437<sup>th</sup> and 603<sup>rd</sup>, respectively.

<sup>26</sup> ABS Regional Population Growth, Australia 2018 (March 2019)

**Table 8.1: SEIFA Indices for Yarriambiack Shire Suburbs, 2011**

	Usual Resident Population		Ranking within Victoria			Minimum score for SA1s in area	Maximum score for SA1s in area
	Score	Rank	Decile	Percentile			
Beulah	329	946	408	2	16	868	1036
Brim	171	993	1104	5	42	993	993
Hopetoun	739	938	335	2	13	871	1036
Minyip	524	911	167	1	7	871	1038
Murtoa	865	923	250	1	10	872	1065
Patchewollock	133	983	903	4	34	964	1016
Rupanyup	536	959	561	3	21	902	1077
Warracknabeal	2744	925	161	2	11	855	1056

Note: The SEIFA Index used in this table relates to Socio-Economic Advantage and Disadvantage.

The Australian Bureau of Statistics broadly defines relative socioeconomic advantage and disadvantage in terms of people's *access to material and social resources, and their ability to participate in society*. There are 2,672 state suburbs in Victoria. A score of 1,000 or above tends to indicate an area which is relatively advantaged, and a score below 1,000 is an area which is relatively disadvantaged. In any of the Wimmera Southern Mallee 'suburbs' there are likely to be pockets which are relatively more advantaged and disadvantaged than the suburb as a whole. The minimum and maximum scores for these smaller pockets (shown as SA1s, Statistical Area 1s) are presented in the final two columns of the table.

Fisheries Victoria has stocked 109,650 fingerlings in Lake Lascelles, Lake Marma and Yarriambiack Creek (servicing the weir pools) in Yarriambiack Shire during the three-year period including 2018-19<sup>27</sup>. Details of the number and species of stockings over this period is summarised in Table 8.2.

**Table 8.2 Fish Released in Yarriambiack Shire 2016-2019**

Units stocked (fingerlings and/or advanced stockers)	Rainbow Trout	Golden Perch	Silver Perch	Total
<b>Yarriambiack Shire</b>				
Lake Lascelles		26,000	39,000	65,000
Lake Marma	1,900	12,000		13,900
Weir Pools – Yarriambiack Creek		30,750		30,750

## 8.2 SELECTED RECREATIONAL WATER FACILITIES

### 8.2.1 Lake Lascelles

Lake Lascelles has a basin volume of 440 megalitres. It is located within the Hopetoun town area and is a very popular holiday and day visit destination. Annual 'top-up' volume from the Wimmera Mallee Pipeline meets the evaporation and seepage losses and is supplemented by natural runoff in wetter periods. The pipeline supply is delivered at a heavily subsidised rate per megalitre which reflects the engagement undertaken by GWMWater with its customer base in development of pricing submissions.

It is attractive for walking, swimming, boating, skiing, fishing and bird watching. Increased water security from Wimmera Mallee Pipeline allocation has given the lake more security to people who choose to return annually. A dedicated fishing 'precinct' adjacent to the lake has been completed in 2019.

<sup>27</sup> Stocking fish in recreational waterways is considered similar to providing an asset, for which there will be a return on investment over three years.

Lake Lascelles has a variety of accommodation options including free unpowered sites, powered sites for \$20 per night and the eclectic collection of cabins/units at the Mallee Bush Retreat, made to replicate structures from the district's pioneering heritage (such as silos, cow sheds, stables and machinery sheds). The Bush Retreat also has a 'shearing shed' accommodating a functional shared kitchen, fireplace, and television room, which is used for functions, dining and as a multi-purpose area.

Lake Lascelles tends to be one of the Wimmera Southern Mallee recreational water facilities that is utilised year-round, although at lower occupancy in the winter months.



Estimated overnight visitors and day trip users of Lake Lascelles in 2016-17 to 2018-19 are summarised in Table 8.3. These estimates have been developed through interviews on site, and discussions with the Lake Lascelles Committee of Management.

**Table 8.3: Estimated Overnight and Day Visitors to Lake Lascelles, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Passive Day Users	Total Participants
2016-17	1,428	6,320	8,052	5,005	14,485
2017-18	1,305	8,228	8,157	5,100	14,562
2018-19	1,609	8,712	8,200	5,100	14,909
% per annum change 2016-17 to 2018-19	6.16%	17.41%	0.91%	0.94%	1.45%

### 8.2.2 Lake Marma

Lake Marma is a small lake, with a basin volume of 170 megalitres. Annual 'top-up' volume from the Wimmera Mallee Pipeline meets the evaporation and seepage losses and is supplemented by natural runoff in wetter periods. The pipeline supply is delivered at a heavily subsidised rate per megalitre which reflects the engagement undertaken by GWMWater with its customer base in development of pricing submissions.



Marma is in the heart of Murtoa’s urban area. The ‘Lake Marma Loop’ encircles the main lake and takes in the main area of the town of Murtoa, giving Murtoa a reputation as a lakeside town. There is a selection of Murtoa - Lake Marma walking trails which encompass natural and historic areas of interest.

Originally a small dammed natural swamp it became incorporated into the Wimmera Mallee water supply system over a century ago and was the source of Murtoa’s drinking water until recently, when it became piped to town.

This lake is a tranquil oasis with abundant birdlife and treed surrounds. The Lake has always been a haven for wildlife, due to its safe location within Murtoa, and is famous for sunset and sunrise views. The lake has experienced severe infestations of ribbon weed in 2017, and the Management is raising funds for its removal.

There is a small caravan park at Lake Marma which is particularly popular with grey-nomad type travellers who tend to stay for extended periods of time. Murtoa Progress Association continues to work towards establishment of 2-3 cabins on a site next to the lake.



Estimated overnight visitors and day trip users of Lake Marma in 2016-17 to 2018-19 are summarised in Table 8.4. These estimates have been developed through interviews on site and discussions with Lake Marma’s Public Park and Gardens Reserve Committee of Management. Participation in 2018-19 was negatively affected by blue green algae and ribbon weed in the Lake throughout the year.

**Table 8.4: Estimated Overnight and Day Visitors to Lake Marma, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Passive Day Users	Total Participants
2016-17	1,110	2,453	1,365	9,237	11,712
2017-18	1,268	2,678	1,456	9,100	11,824
2018-19	1,613	3,711	1,055	9,546	12,214
% per annum change 2016-17 to 2018-19	20.56%	22.99%	-12.09%	1.66%	2.12%

### 8.2.3 Brim and Beulah Weir Pools

Brim weir pool is one of the smallest recreational water facilities in the Wimmera Southern Mallee, with a basin volume of 120 megalitres. Beulah weir pool is larger, with a basin volume of 140 megalitres. Annual 'top-up' volume from the Wimmera Mallee Pipeline meets the evaporation and seepage losses (for both weir pools) and is supplemented by natural runoff in wetter periods. The pipeline supply is delivered at a heavily subsidised rate per megalitre which reflects the engagement undertaken by GWMWater with its customer base in development of pricing submissions.

Redda's Park is the recreational complex on the Yarriambiack Creek at the Brim Weir. It offers camping in a bushland setting, amenities, walking tracks, powered and non-powered sites and BBQ facilities. The park was landscaped and constructed by Brim Lions Club in 2001. Toilets have two hot and cold showers each, timed by push button. The campground is illuminated at night. Powered sites are \$10 per night.

The Yarriambiack Silo Art Trail was pioneered with the artwork on silos at Brim, and the Reserve Committee of Management suggests that it is difficult to separate specific visitation for the Weir (including those people camping or caravanning on-site).

The Beulah weir is also constructed across the Yarriambiack Creek, creating another recreation ground with powered and unpowered camping sites, a playground, barbecue facilities. Recent new amenities have been installed including a landscaped grassed area and rubbish disposal facilities. Boating is permitted on the Beulah Weir Pool and fishing, bird watching and walking is popular. There is also a public swimming pool in the grounds. Two new cabins, overlooking the weir pool, were constructed at the Beulah Reserve in 2019 but their completion was at the end of the interview period for 2018-19 (after Easter).

Estimated overnight visitors and day trip users of the Brim and Beulah Weir Pools in 2016-17 to 2018-19 are summarised in Tables 8.5 and 8.6. These estimates have been developed through interviews on site and discussions with the Beulah Reserve Committee of Management and Brim Reserve Committee of Management.

**Table 8.5: Estimated Overnight and Day Visitors to Beulah Weir Pool, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Total Participants
2016-17	783	3,117	1,176	1,959
2017-18	930	3,282	1,190	2,120
2018-19	1,114	3,825	1,288	2,402
% per annum change 2016-17 to 2018-19	19.26%	10.77%	4.65%	10.72%

**Table 8.6: Estimated Overnight and Day Visitors to Brim Weir Pool, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Total Participants
2016-17	2,172	7,343	5,198	7,370
2017-18	2,483	7,937	5,260	7,743
2018-19	2,245	8,532	5,302	7,547
% per annum change 2016-17 to 2018-19	1.67%	7.79%	1.00%	1.20%

#### 8.2.4 Warracknabeal Weir Pool

Yarriambiack Creek is an inland intermittent watercourse of the Wimmera catchment. The Weir Pool on the Yarriambiack Creek at Warracknabeal has a basin volume of 210 megalitres. Annual 'top-up' volume from the Wimmera Mallee Pipeline meets the evaporation and seepage losses and is supplemented by natural runoff in wetter periods. The pipeline supply is delivered at a heavily subsidised rate per megalitre which reflects the engagement undertaken by GWMWater with its customer base in development of pricing submissions.

In Warracknabeal, the weir pool and the creek meandering through town are part of the recreational water facilities. Warracknabeal Caravan Park is located near the banks of the weir pool section of the creek, providing powered and unpowered sites, en-suites, barbecues and laundry facilities.



As with the Wimmera River in Horsham, Warracknabeal Weir Pool on Yarriambiack Creek is used widely by local residents and community groups for walking and other forms of regular exercise, as well as the site for tranquil picnics and relaxation. There is a fauna park in a main section of the creek, near Warracknabeal's commercial district, and several walking tracks that transect walking bridges across. Among the many regular users of the creek and weir pool at Warracknabeal are:

- The Warracknabeal Angling Club,
- Warracknabeal Ski Club.
- Woodbine Centre Incorporated, visiting most days with its 12-seater bus.
- Primary, secondary and disabled schools.

Membership of both the angling club and ski club declined in the past two years, and the number of people using ski boats (largely on weekends) declined as well. Warracknabeal's annual Easter festival, the Y-Fest focuses strongly on activities along the Creek.

Estimated overnight visitors and day trip users of the Warracknabeal Weir Pool in 2016-17 to 2018-19 are summarised in Table 8.7. These estimates have been developed through interviews on site and discussions with the Committee of Management.

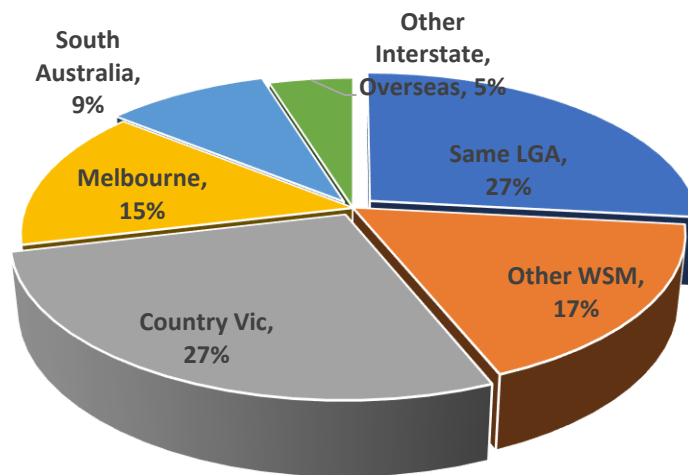
**Table 8.7: Estimated Overnight and Day Visitors to Warracknabeal Weir Pool, 2016-17 to 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Passive Day Users	Total Participants
2016-17	5,101	18,492	3,512	16,415	25,028
2017-18	2,919	10,403	3,319	15,939	22,177
2018-19	2,756	12,277	3,305	16,150	22,211
% per annum change 2016-17 to 2018-19	-26.50%	-18.52%	-2.99%	-0.81%	-5.80%

### 8.3 ECONOMIC CONTRIBUTION

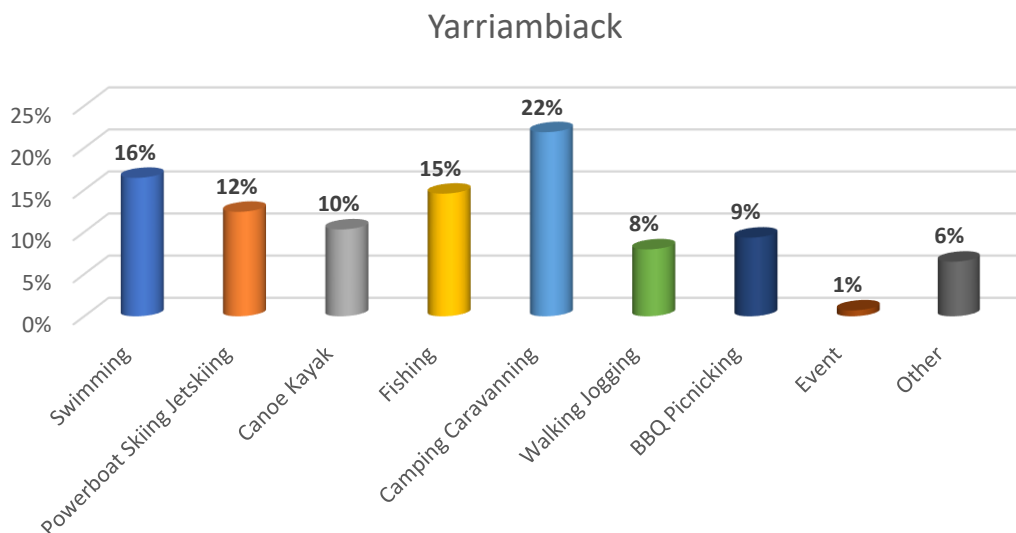
Figure 8.1 shows 44% of recreational water users at Yarriambiack Shire sites were Wimmera Southern Mallee residents in 2018-19, and a further 27% were from other parts of country Victoria. Melbourne metropolitan visitation was 15%, while Yarriambiack had a high level of interstate and overseas visitors (14%) substantially due to the interest generated by the Silo Art Trail and the flow-on to people staying at the recreational water sites.

**Figure 8.1 Residential Location of Recreational Water Users, Yarriambiack Shire**



Relative participation in recreational activities at Yarriambiack lakes and weirs in 2018-19 (during November 2018 to April 2019) is shown in Figure 8.2.

**Figure 8.2 Recreational Activities at Yarriambiack Lakes and Weirs, 2018-19**



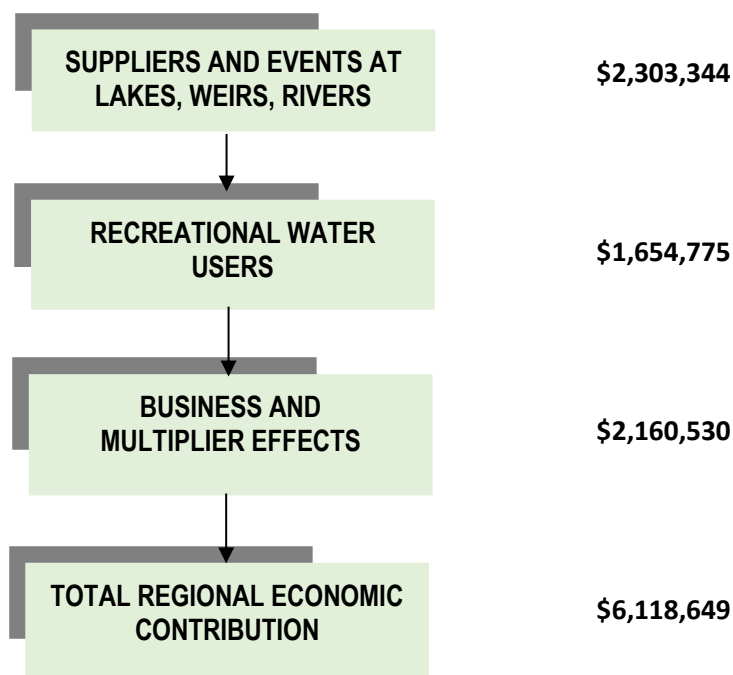
Tables 8.8 and 8.9 and Figure 8.3 detail the estimated 2018-19 economic contribution of the assessed recreational water facilities in Yarriambiack Shire.

**Table 8.8: Estimated Economic Contribution 2018-19: Recreational Water Facility Users**

	Total Overnight Visitors	Total Visit Nights	Active Day Visitors	Passive Day Visitors	Total Participation	% Change on 2017-18
<b>Visitation and Participation</b>						
Brim Weir Pool	2,245	8,532	5,302	n.a.	7,547	-2.53%
Beulah Weir Pool	1,114	3,825	1,288	n.a.	2,402	13.23%
Lake Lascelles	1,609	8,712	8,200	5,100	14,909	2.39%
Lake Marma	1,613	3,711	1,055	9,546	12,214	3.30%
Warracknabeal Weir Pool	2,756	12,277	3,305	16,150	22,211	0.15%
<b>Total Yarriambiack Shire</b>	<b>9,338</b>	<b>37,056</b>	<b>19,150</b>	<b>30,796</b>	<b>59,284</b>	<b>1.47%</b>
<b>Visitor Expenditure (\$)</b>						
Brim Weir Pool		\$278,321	\$104,481	n.a.	\$382,802	8.49%
Beulah Weir Pool		\$93,214	\$25,116	n.a.	\$118,330	4.31%
Lake Lascelles		\$320,781	\$164,000	\$13,515	\$498,296	-6.06%
Lake Marma		\$116,866	\$15,034	\$19,092	\$150,992	16.14%
Warracknabeal Weir Pool		\$373,305	\$90,676	\$40,375	\$504,356	-0.83%
<b>Total Yarriambiack Shire</b>		<b>\$1,182,487</b>	<b>\$399,306</b>	<b>\$72,982</b>	<b>\$1,654,775</b>	<b>1.19%</b>

**Table 8.9: Estimated Economic Contribution 2018-19: Supplier Organisations**

Suppliers: Direct	
Caravan Parks/Committees of Management	\$234,311
Events and Other Businesses	\$167,500
Statutory Agencies <sup>28</sup>	\$1,901,533
<b>Total Yarriambiack Shire</b>	<b>\$2,303,344</b>

**Figure 8.3: 2018-19 Estimated Recreational Water Economic Contribution: Yarriambiack Shire**<sup>28</sup> Statutory agencies include Fisheries Victoria, Wimmera CMA and GWM Water

## 9. ROCKLANDS RESERVOIR

### 9.1 OVERVIEW OF THE RECREATIONAL WATER FACILITY

Rocklands Reservoir, located on the Glenelg River, 14 kilometres upstream of Balmoral is GWMWater's largest reservoir and one of Victoria's largest water storages. Rocklands Reservoir provides a water supply for consumptive and environmental purposes in both the Glenelg and Wimmera catchments. Rocklands Reservoir demands include environmental supply to the Glenelg River, urban supply to Hamilton and Balmoral and transfers to the Wimmera for consumptive, environmental and recreational purposes.

A unique feature of Rocklands Reservoir is that all Wimmera-Glenelg entitlement holders, including the environment, can be supplied from this reservoir. It has an important role to play in the region as a recreational destination.

Rocklands has been included in the Wimmera Southern Mallee recreational water assessment in 2018-19 due to the investment in a fish stocking program and the anticipated increase in visitor numbers expected to result from the planned boost in the native fishery.

The reservoir construction began in 1938 but was delayed during World War II and construction recommenced in 1950, with the dam being completed in 1953. A 270 metres long cement gravity dam forms the main wall and it is flanked by two embankment sections. The reservoir has a full supply volume of 296,000 megalitres with a surface area of 60.8 square kilometres. The catchment area of Rocklands Reservoir is 1,355 square kilometres.



Rocklands Reservoir has extensive stands of timber below full supply level, which were created when the forest was flooded in the 1950's. These conditions provide ideal fish habitat supporting a high-quality recreational fishery for Murray cod, golden perch and estuary perch. Based on the VFA's experience in developing other native fisheries, annual fishing participation at Rocklands is expected to double over the five years (from 2018 to 2022) as stocked fish reach catchable size.

There are managed caravan parks/camping grounds, with powered and unpowered sites and amenities, at the Rocklands Weir Wall and Hynes (with both a camping ground accessible to the public and a ground managed by the Horsham Angling Club). A range of other camping areas around Rocklands Reservoir are in open box woodlands on the foreshore. Popular sites on the south side of the Reservoir are Glendinning, Fergusons and the Weir Wall (where there is a managed tourist caravan park) and on the north side at Mountain Dam and Brodies. Mountain Dam has toilets with wheelchair accessible fireplaces, and Glendinning, Fergusons and Mountain Dam have fireplaces, toilets, picnic tables and boat ramps.

In 2018 the Victorian Fisheries Authority commenced a significant fish stocking program, including plans to stock large numbers of Murray cod and golden perch, and estuary perch when available. The development of Rocklands fishery aligns with the State Government's Target One Million plan to get more people fishing, more often.

Fisheries Victoria has stocked 1,033,092 fingerlings and advanced stocker fish in Rocklands Reservoir during the three-year period including 2018-19<sup>29</sup>. Native species make up the overwhelming majority of stockings.

Details of the number and species of stockings over this period are summarised in Table 9.1.

**Table 9.1 Fish Released in Rocklands Reservoir 2016-2019**

Units stocked (fingerlings and/or advanced stockers)	Brown Trout	Rainbow Trout	Murray Cod	Golden Perch	Total
Rocklands Reservoir	4,500	7,600	515,342	505,650	1,033,092

Estimated overnight visitors and day users of the main sites around Rocklands in 2018-19 are summarised in Table 9.2. These estimates have been developed through interviews on site, traffic counts (supplied by DELWP), and discussions with suppliers to the lake.

<sup>29</sup> Stocking fish in recreational waterways is considered similar to providing an asset, for which there will be a return on investment over three years.





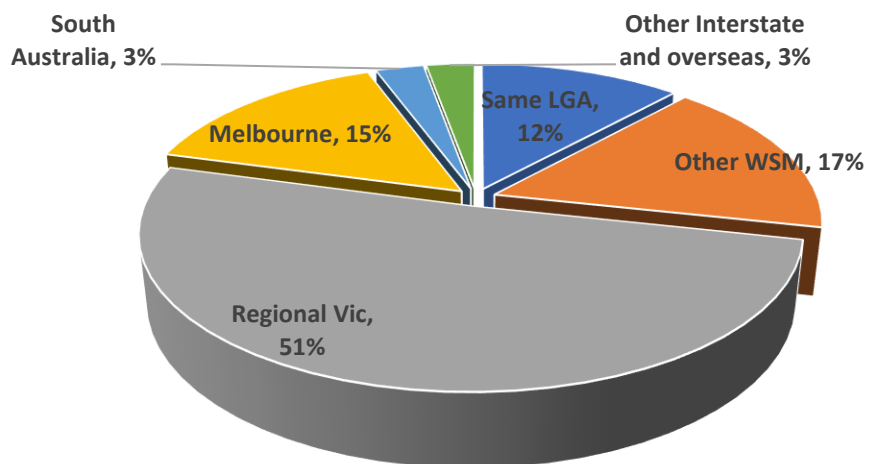
**Table 9.2: Estimated Overnight and Day Visitors to Rocklands Reservoir 2018-19**

	Overnight Visitors	Total visit nights	Active Day Users	Total Participants
2018-19	14,662	58,072	8,431	23,093

**9.2 ECONOMIC CONTRIBUTION**

Figure 9.1 shows that around 80% of Rocklands Reservoir users were from country Victoria (including 29% from WSM), 15% Melbourne and 6% interstate and overseas<sup>30</sup>.

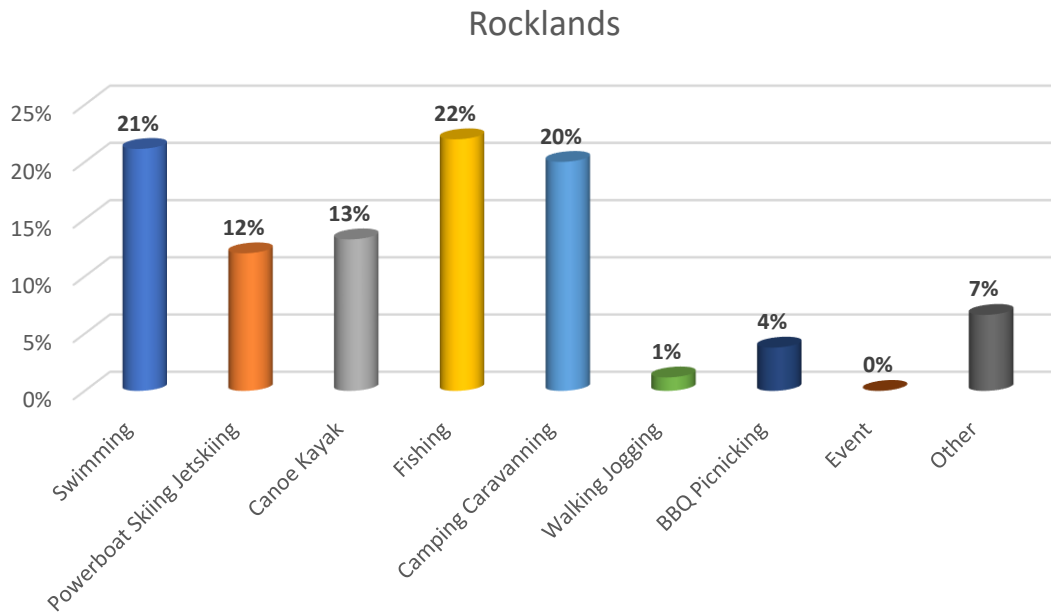
**Figure 9.1 Residential Location of Recreational Water Users, Rocklands Reservoir**



<sup>30</sup> The total percentages are 101% due to rounding

Relative participation in recreational activities at Rocklands Reservoir in 2018-19 (during November 2018 to April 2019) is shown in Figure 9.2.

**Figure 9.2 Recreational Activities at Rocklands Reservoir, 2018-19**



Tables 9.3 and 9.4 and Figure 9.3 detail the estimated 2018-19 economic contribution of recreational water at Rocklands Reservoir.

**Table 9.3: Estimated Economic Contribution 2018-19: Recreational Water**

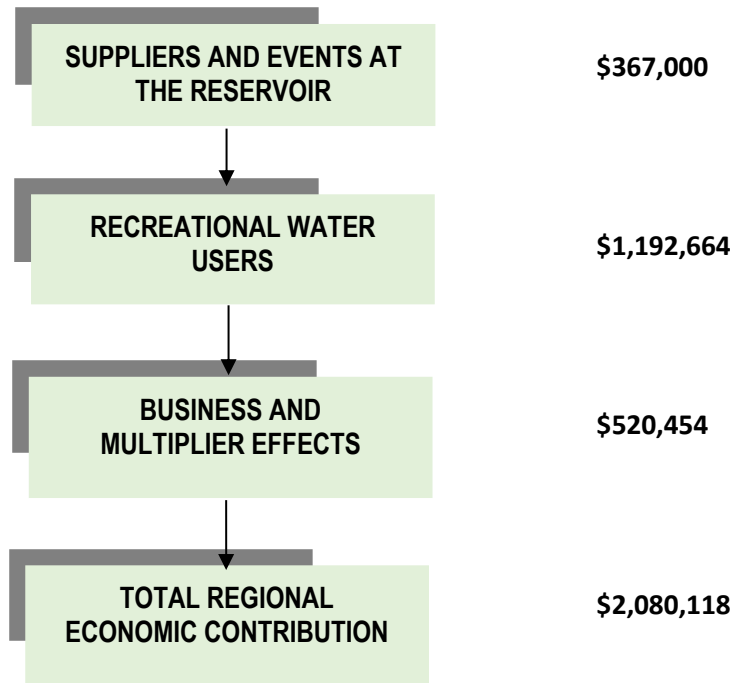
	Total Overnight Visitors	Total Visit Nights	Active Day Visitors	Total Participation
Rocklands Reservoir	14,662	58,072	8,431	23,093
<b>Visitor Expenditure (\$)</b>				
Rocklands Reservoir		\$1,066,195	\$126,469	\$1,192,664

**Table 9.4: Estimated Economic Contribution 2018-19: Supplier Organisations**

Suppliers: Direct	
Caravan Parks/Committees of Management	\$134,070
Events and Other Businesses	\$0
Statutory Agencies <sup>31</sup>	\$232,930
<b>Total Horsham Rural City</b>	<b>\$367,000</b>

<sup>31</sup> These agencies include Wimmera CMA, GWM Water, Fisheries Victoria and DELWP (Forests)

**Figure 9.3 2018-19 Estimated Recreational Water Regional Economic Contribution: Rocklands Reservoir**



## 10. COMMUNITY AND SOCIAL EFFECTS

### 10.1 COMMUNITY IMPACTS

Local communities report that the Wimmera Southern Mallee’s recreational water facilities make an extremely important contribution to the social fabric of the region’s towns, provide a critical outlet for physical and mental relaxation, enhance the amenity of towns and rural areas, and improve the health of residents and visitors to the region.

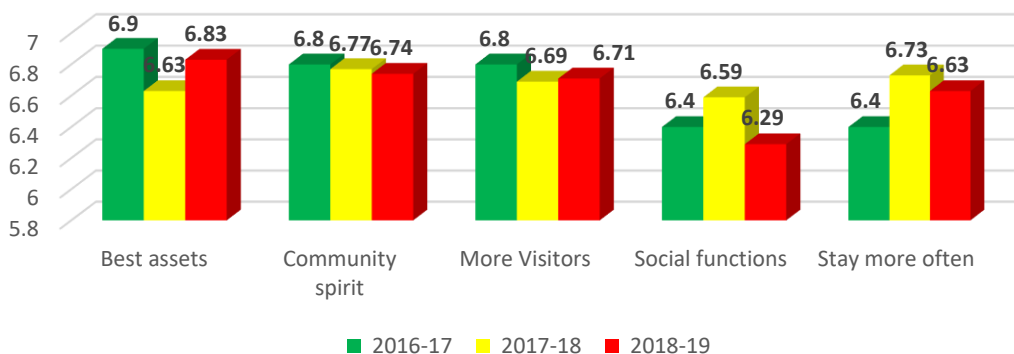
Community impacts are strong across all recreational water facilities, evidenced by WSM resident perceptions. On a scale of 1 to 7, where 1 means ‘totally disagree’ and 7 means ‘totally agree’, average (resident) participant ratings in 2018-19 are presented in Table 10.1.

**Table 10.1 Perceptions of Community Wellbeing**

When there are good levels of water in the weir, lake or river:					
	It is one of the local community’s best assets	Community spirit increases	More people come to town	More social functions in the community	I stay in WSM region more often on weekends and holidays
Buloke	6.73	6.86	6.86	6.71	6.86
Hindmarsh	6.25	6.25	6.00	5.38	6.00
Horsham	6.89	6.72	6.72	6.12	6.35
Northern Grampians	6.77	6.62	6.62	5.69	6.54
West Wimmera	6.90	6.80	6.85	6.70	6.65
Yarriambiack	6.78	6.72	6.67	6.61	6.78
Southern Grampians (Rocklands)	6.69	6.46	6.38	5.64	6.46
<b>Total WSM</b>	<b>6.83</b>	<b>6.74</b>	<b>6.71</b>	<b>6.29</b>	<b>6.63</b>

Changes in the average ratings are summarised in Figure 10.1.

**Figure 10.1 Changes in Perceptions of the Importance of Recreational Water 2016-17 to 2018-19**



The first three ‘importance factors’ in Figure 10.1 have all decreased marginally since 2016-17, suggesting that the relative importance tends to wane slightly as the newness of having good levels of water subsides, and it becomes more of an expectation. Conversely, ‘more visitors’ and ‘spending more time in the local area’ probably take more planning and therefore have increased over time. Social functions have fluctuated, probably reflecting the water (volume or quality) in lakes frequented mostly by locals.

WSM residents rated their perceptions of the local community as a place to live. Responses were given to prompts, with a rating of 1 meaning totally disagree and a rating of 7 meaning totally agree with the prompted statement. The results are presented in Table 10.2.



**Table 10.2 Perceptions of Local Communities as a Place to Live**

	My community is a great place to live	The community copes well when faced with challenges	I feel proud to live in the community	The community has a bright future	There is good community spirit	Local groups and organisations are good at getting things done	Some individuals get left out of the community	There is a lot of disagreement between people in the community	I attend community events such as farmers' markets, festivals and shows	I take part in community-based organisations (eg Rotary, Lions, CWA)	I take part in sports groups or teams	I feel part of my community	Local businesses in my town are doing well at the moment
Buloke	6.85	6.92	6.92	5.83	6.92	6.42	2.64	1.54	4.92	5.31	5.54	5.54	5.38
Hindmarsh	5.88	5.38	6.00	5.13	5.25	5.88	3.75	2.25	3.25	4.63	3.63	6.00	5.13
Horsham	6.18	5.88	6.18	5.56	6.12	5.81	2.60	1.85	3.31	4.00	4.86	6.00	5.00
Northern Grampians	6.27	4.88	5.89	4.13	5.11	5.63	2.33	2.25	4.78	3.44	5.40	6.56	3.89
West Wimmera	6.53	6.71	6.80	5.88	6.93	6.63	1.73	1.67	5.47	4.40	4.06	6.75	5.38
Yarriambiack	6.56	6.40	6.69	5.07	6.31	6.33	2.27	1.40	5.47	3.79	5.15	6.73	4.33
Southern Grampians (Rocklands)	6.83	6.17	6.42	6.15	6.58	6.33	3.15	2.17	2.50	3.15	3.31	6.00	5.42
<b>Total WSM</b>	<b>6.54</b>	<b>6.23</b>	<b>6.53</b>	<b>5.56</b>	<b>6.35</b>	<b>6.27</b>	<b>2.59</b>	<b>1.83</b>	<b>4.37</b>	<b>4.15</b>	<b>4.63</b>	<b>6.31</b>	<b>5.02</b>
Last Year 2017-18	6.46	6.03	6.31	5.53	6.16	6.02	2.58	2.09	4.80	4.45	5.25	6.49	5.18

## 10.2 HEALTH AND LIFESTYLE IMPACTS

Regular participation in physical activity provides significant health benefits to individuals from both a physical and mental perspective.

The physical health benefits analysed in this assessment are derived from the prevention of chronic diseases (such as breast cancer, coronary heart disease, diabetes, bowel cancer and stroke). Mental health benefits are derived from the prevention of anxiety and depression.

The value of Wimmera Southern Mallee recreational water residents' health contribution has been estimated based on the prevention of these physical and mental diseases among the 2018-19 recreational water participation base, and results are summarised in Table 10.3. The assessment is similar to many previous sport and recreation industry studies and includes data input related to the reduction in Disability-Adjusted Life Years (DALY) from the Australian Institute of Health and Welfare and the Australian Government Department of Health.

Modelling of the health benefits is based on conservative estimates, and is focussed on selected health issues which are evidenced to be attributed to physical inactivity.

WSM recreational water users achieve a considerable proportion of the physical and mental activities towards a Disability Adjusted Life Year, through the time spent at the water recreational facilities. On average, these estimated percentages were:

	Overnight and Active	Passive
Buloke Shire	35.9%	35.8%
Hindmarsh Shire	23.3%	56.0%
Horsham Rural City	71.8%	100%
Northern Grampians Shire	60.1%	13.7%
West Wimmera Shire	33.2%	91.7%
Yarriambiack Shire	98.0%	47.0%
Southern Grampians (Rocklands)	63.3%	n.a.

**Table 10.3 Total Estimated Health Benefits<sup>32</sup>**

	Physical Health Benefits	Mental Health Benefits	Total Health Benefits
2018-19 WSM Residents			
- Activities at water facilities	\$1,392,784	\$164,142	\$1,556,926
- Total annual*	\$2,157,525	\$271,957	\$2,429,483
2018-19 Country Victorian Residents			
- Activities at water facilities	\$3,310,023	\$397,917	\$3,708,007
- Total annual*	\$4,853,763	\$670,538	\$5,524,300
2017-18 Country Victorian Residents			
- Activities at water facilities	\$3,549,879	\$255,799	\$3,805,678
- Total annual*	\$5,027,641	\$462,717	\$5,490,358

\* Total annual figures assume that activities at WSM water facilities are indicative of annual lifestyle

Lakes and other water facilities have been identified as important community assets and directly contribute to improving the quality of life (both physical and mental) of residents and visitors. As walking and swimming are usually conducted in casual or informal settings, access to lakes and water facilities (and their surrounds) encourage and support participation in physical activity.

<sup>32</sup> Selected health conditions measured by activities required to reduce Disability-Adjusted Life Years (DALYs)

The estimated health benefits by local government area, for country Victorian residents in 2018-19 are presented in Table 10.4.

**Table 10.4 Estimated Physical and Mental Health Benefits, Country Victorian Users, 2018-19**

LGA	Water Facility	Physical Health Benefits	Mental Health Benefits	Total Health Benefits
Horsham	Wimmera River-Horsham Green Lake Taylors Lake Lake Toolondo	\$698,648	\$67,857	\$766,505
Hindmarsh	Wimmera River-Dimboola Nhill Lake Wimmera River-Jeparit	\$120,859	\$11,225	\$132,229
Northern Grampians	Lake Bellfield Lake Fyans Lake Lonsdale Lake Wartook Walkers Lake	\$568,572	\$126,190	\$694,763
Buloke	Donald Park Lake Tchum Lake Green Lake, Sea Lake Lake Watchem Lake Wooroonook	\$168,087	\$21,473	\$189,561
West Wimmera	Lake Wallace Lake Charlegrark Lake Bringalbert Lake Ratzcastle	\$105,402	\$22,062	\$127,464
Yarriambiack	Brim Weir Pool Beulah Weir Pool Lake Lascelles Lake Marma Warracknabeal Weir Pool	\$1,035,986	\$70,045	\$1,106,031
Southern Grampians	Rocklands Reservoir	\$612,469	\$79,065	\$691,454
		\$3,310,023	\$397,917	\$3,708,007

Australian Government Department of Health Physical Activity and Sedentary Behaviour Guidelines “suggest that Australian adults aged 18 to 64 years should “accumulate 150 to 300 minutes (2 ½ to 5 hours) of moderate intensity physical activity or 75 to 150 minutes (1 ¼ to 2 ½ hours) of vigorous intensity physical activity, or an equivalent combination of both moderate and vigorous activities, each week”. The Disability-Adjusted Life Years (DALY) from the Australian Institute of Health and Welfare is 250 hours of physical activity. Recreational water users who are residents of WSM and Country Victoria tend to have active lifestyles which exceed the minimum recommended levels of physical activity.

Three of the top ten most common diseases in Australia are preventable through physical activity, with 5.0% of all diseases being attributed to physical inactivity (according to the Australian Institute of Health and Welfare). The diseases which are preventable through physical activity have a significant negative impact on the health of Australians aged 45+ years of age. Therefore, participation at water recreation facilities plays a significant preventative role in the later stages of life.



Physical inactivity is also the fourth highest risk of causing disease, behind tobacco, obesity and alcohol use. A total of 94% of the burden of disease resulting from physical inactivity is borne by people aged 15 years and above.

Mental disorders are the third most burdensome disease and are most prominent among younger people and females. Based upon evidence used by the Department of Health to support current physical activity guidelines, a conservative estimate of the preventative effect of adequate levels of physical activity is a 25% reduction in risk of anxiety and depression.

Health and wellbeing satisfaction self-assessments were scored on a scale of 1 to 10 with 10 being the highest level of satisfaction. Results are presented in Table 10.5.

**Table 10.5 Health and Wellbeing Satisfaction Ratings: WSM Recreational Water Users 2017-19**

	Your health	Your standard of living	What you are currently achieving in life	Your relationships with friends and family	How safe you feel	Feeling part of your community	Your future security
Buloke	8.83	9.17	8.83	9.42	9.75	9.58	9.33
Hindmarsh	8.25	7.38	8.00	9.38	8.75	8.75	7.88
Horsham	8.00	7.83	7.76	8.24	8.53	8.06	8.10
Northern Grampians	8.92	8.58	8.42	9.08	9.08	8.67	8.15
West Wimmera	8.94	9.25	9.13	9.50	9.72	9.88	9.39
Yarriambiack	8.72	9.06	9.12	9.47	9.41	9.47	8.35
Southern Grampians (Rocklands)	7.85	8.31	8.46	8.77	9.15	9.08	8.15
<b>Total WSM 2018-19</b>	<b>8.61</b>	<b>8.66</b>	<b>8.66</b>	<b>9.19</b>	<b>9.32</b>	<b>9.19</b>	<b>8.61</b>
2017-18 Total WSM	8.86	8.63	8.63	9.09	9.42	9.01	8.75