

WIMMERA SOUTHERN MALLEE:

*Socio-Economic Value
of Recreational and
Environmental Water
2017*



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



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EXECUTIVE SUMMARY

E1 Background

This project has been a joint initiative of Wimmera Development Association, GWM Water, the Wimmera Catchment Management Authority, and Local Councils. It has been designed to make an initial assessment of the economic and social contribution made by the local weirs, lakes and rivers to the regional economy. This assessment is year one of a longer term annual study. The project encompassed assessments of 24 lakes, weir pools and rivers around the region.

E2 Recreational Water Facility Visitation and Usage

- Estimated recreational water users in 2016-17 at the selected facilities are:
 - Overnight visitors: 56,887
 - Visit nights: 196,088
 - Local active participation (people using the water facility as a day trip destination for fishing, swimming, boating, picnicking on the banks): 78,156
 - 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): 163,189
 - Total recreational water participation: 437,433
 - Estimated number of people involved: 85,135
- 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.
- A large majority of overnight visitors to the recreational water facilities are from 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 20% of all 'suburbs' in Victoria, and all (except Watchem ranking 648th of 1,516 suburbs in Victoria, Goroke ranking 530th and Minimag ranking 1,173rd) are within the most disadvantaged 350 Victorian suburbs (of 1,516 suburbs in total)¹. 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 24 selected recreational water facilities in the Wimmera Southern Mallee is \$27.536 million in 2016-17.
- Estimated economic contributions of the water facilities to their respective local areas is:
 - Buloke Shire: \$1.045 million
 - Hindmarsh Shire: \$1.302 million
 - Horsham Rural City: \$8.442 million
 - Northern Grampians Shire: \$7.038 million
 - West Wimmera Shire: \$2.619 million
 - Yarriambiack Shire: \$2.873 million
 - Other WSM municipalities: \$4.218 million
 - Total: \$27.536 million.

¹ 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.

Figure E1 **Estimated Recreational Water Economic Contribution to Local Areas, 2016-17:**
(\$'000)

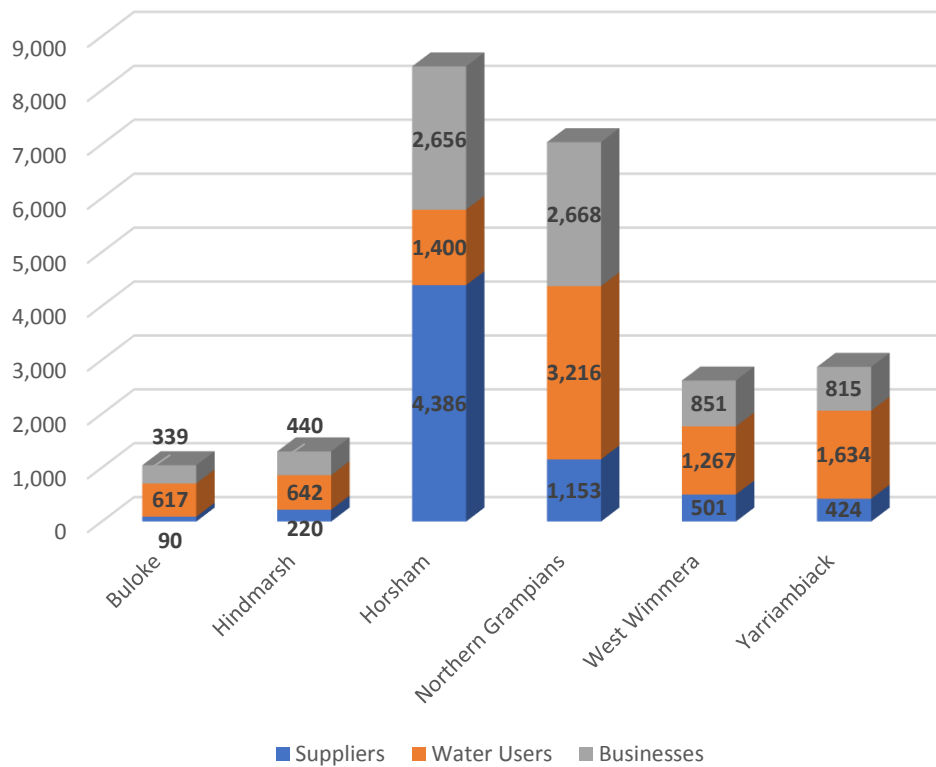
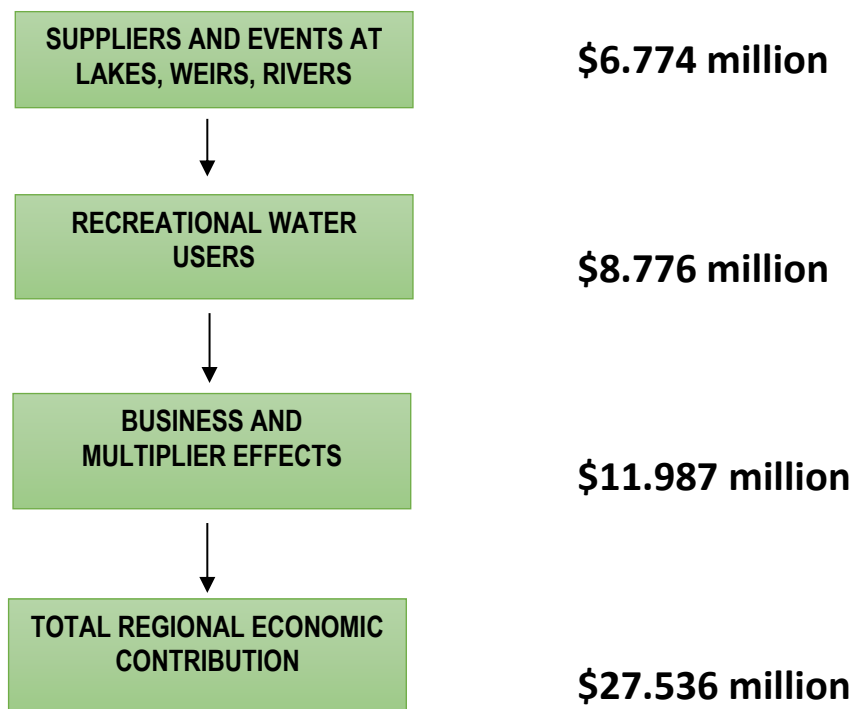


Figure E2 **2016-17 Estimated Recreational Water Economic Contribution: WSM Region**



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 calculated total health benefits from participation at WSM recreational water facilities in 2016-17 include:
 - Physical: Annual benefit: \$7,955,132
 - Mental benefit: \$ 618,421
 - Total annual health benefit \$8,573,553
- On average, WSM recreational water users exceed the Australian Government guidelines for moderate intensity physical activity each week. The upper end of the scale recommended scale, suggests an average of 5 hours per week of moderate intensity activity (such as brisk walking, swimming, cycling or rowing). This recommended level of activity is well exceeded, on average, by users at every WSM recreational water facility (except Lake Watchem).
- 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: 6.4
 - The community copes well when faced with challenges: 6.1
 - I feel proud to live in the community: 6.4
 - The community has a bright future: 5.7
 - There is good community spirit: 6.1
 - Local groups and organisations are good at getting things done: 5.9
 - Some individuals get left out of the community: 3.7
 - There is a lot of disagreement between people in the community: 3.0
 - I attend community events such as farmers' markets, festivals and shows: 5.3
 - I take part in community-based organisations (eg Rotary, Lions, CWA): 4.1
 - I take part in sports groups or teams: 5.1
 - 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 2017.
 - Your health: 7.9
 - Your standard of living: 8.2
 - What you are currently achieving in life: 8.3
 - Your relationships with friends and family: 8.6
 - How safe you feel: 8.9
 - Feeling part of your community: 8.4
 - Your future security: 7.8.

1. INTRODUCTION

1.1 ACKNOWLEDGEMENTS

This project was undertaken during March to July 2017 by Street Ryan under the direction of a Steering Group comprising.

- Ralph Kenyon, Chief Executive, Wimmera Development Association (Chair)
- Mark Fletcher, Project Officer, Wimmera Development Association
- Tony Baker, Statutory and Strategy Manager, Wimmera CMA
- Bernie Dunn, Co-ordinator Water Resources and Recreation Strategy, GWMWater
- James Goldsmith, Economic Development Officer, representing Wimmera 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 assisted by Sport Business Partners in the estimation of health benefits for the recreational water facilities, and Insight Communications in interviews and consultations with businesses in Horsham, Stawell, and Halls Gap.



1.2 SCOPE

This project was a joint initiative of Wimmera Development Association, GWM Water, the Wimmera Catchment Management Authority, and Local Councils. It has been designed to assess the economic and social contribution made by the local weirs, lakes and rivers to the regional economy and local communities. This assessment is 'year one' of a longer term annual study. The project is intended to support development of facilities and government grant applications as well as planning for future water allocations.

The project encompassed assessments of 24 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 (trades related), 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/weir pools) including accommodation, food services, health, sport and recreation, transport, retail and personal services.

The 2017 assessment process involved:

- Level 1: Supplier Organisations

- Person to person and telephone interviews with 29 Wimmera Southern Mallee recreational water facility supplier organisations.
- Level 2: Recreational Water Users
 - Person to person interviews with 1,357 recreational water facility users (overnight, active and passive day visitors)
 - Online surveys completed by 171 recreational water facility users (overnight, active and passive day visitors), many of which were users of multiple facilities.
- Level 3: Local Businesses
 - Person to person interviews with 99 businesses in towns servicing recreational water facilities.
 - Online surveys completed by 4 businesses in towns servicing recreational water facilities.

The 24 lakes, weir pools and rivers were:

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

Person to person interviews were conducted during March and April 2017, with online responses continuing until the end of May. Although respondents were asked to comment on their usage of

recreational facilities, and business impacts, over the entire 2016-17 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, the bias associated with the limited interview period has been addressed in discussions with service providers at the recreational water facilities and with Committees of Management.

It would be beneficial if the recreational water Committees of Management and/or Caravan and Camping Ground operators are able to implement a basic collection system for recording visitation at their facilities throughout each year, to assist with future social and economic assessments. A simple system of forms has been designed and discussed with most of the committees during the 2017 project. Commencing future projects earlier in the warmer seasons would also be a valuable improvement in capturing representative results.

2. WIMMERA SOUTHERN MALLEE REGION RESULTS

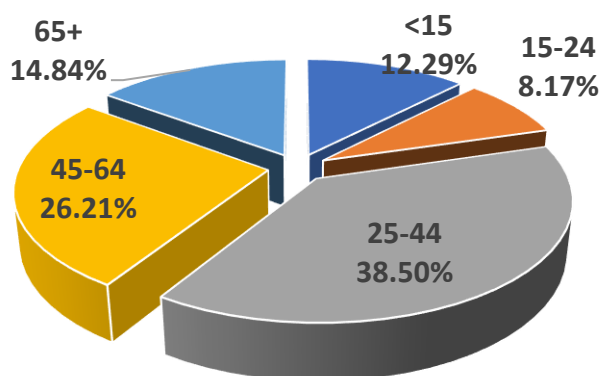
2.1 DEMOGRAPHIC AND LOCATION CHARACTERISTICS OF INTERVIEWEES

Features of WSM recreational water facilities are:

- Strong participation among both male (51.7%) and female (48.3%) residents and visitors.
- Activities 'for a lifetime', with good levels of participation across all age ranges, as shown in Figure 2.1.
- 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 45 to 64 years the second largest, as shown in Figure 2.1.

Figure 2.1 Age Structure of WSM Recreational Water Users



Males make up the majority of users for most of the Wimmera Southern Mallee recreational water facilities. The gender split, of recreational water users interviewed in 2016-17 was 51.7% male and 48.3% female. Male users were in them majority at:

- Wimmera River – Dimboola (63.0%)
- Foletti Park Lake – Donald (72.2%)
- Green Lake (61.0%)
- Glenelg River – Harrow (54.1%)
- Wimmera River – Horsham (52.0%)
- Lake Bellfield (50.9%)
- Lake Lascelles (64.5%)
- Lake Lonsdale (66.7%)
- Lake Wartook (62.1%)
- Lake Marma (52.2%)
- Nhill Lake (55.9%)
- Taylors Lake (61.0%)
- Tchum Lake (59.0%)
- Lake Watchem (63.0%)
- Lake Wooroonook (66.7%)
- Yarriambiack Creek (51.0%)

Female users were in the majority at:

- Beulah and Brim Weir Pools (51.5%)
- Wimmera River – Jeparit (59.2%)
- Lake Charlegrark (50.7%)
- Lake Wallace (69.7%)
- Lake Fyans (50.7%)

Estimated recreational water users in 2016-17, detailed in Table 2.1, at the selected facilities are:

- Overnight visitors:	56,887
- Visit nights:	196,088
- Local active participation:	78,156
- Local passive participation:	163,189
- Total recreational water participation:	437,433
- Estimated number of people involved:	85,135

Table 2.1 Estimated Recreational Water Facility Users, 2016-17

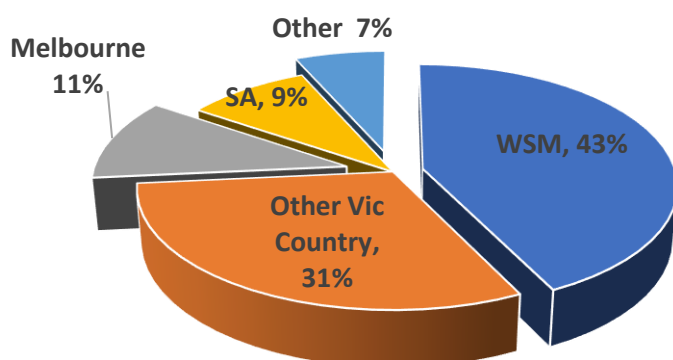
Recreational Water Facility	Visit Nights/ Person Nights	Overnight Visitors	Active Day Users	Passive Day Users
Wimmera River - Horsham*	10,429	3,401	13,510	61,446
Green Lake	1,630	469	9,544	0
Taylors Lake	6,289	2,051	1,612	0
Wimmera River - Dimboola*	8,197	2,801	6,380	13,680
Nhill Lake*	1,053	499	6,460	10,025
Wimmera River - Jeparit and Lake Hindmarsh*	4,344	1,275	1,396	7,295
Lake Bellfield*	4,453	1,177	2,173	14,842
Lake Fyans	66,456	21,649	2,681	3,485
Lake Lonsdale	1,995	469	1,500	5,000
Lake Wartook	2,304	641	660	0
Walkers Lake	3,101	768	1,430	0
Donald Park Lake*	4,742	912	2,197	3,645
Tchum Lake	3,830	1,343	2,600	1,459
Lake Watchem	3,203	1,139	900	0
Lake Wooroonook	3,630	764	1,094	0
Lake Wallace*	19,834	4,481	2,038	9,842
Lake Charlegrark	6,879	1,697	2,215	0
Glenelg River - Harrow*	4,692	1,358	464	1,813
Brim Weir*	8,649	2,172	5,198	0
Beulah Weir*	3,117	783	1,176	0
Brim and Beulah Weirs*	11,762	2,955	6,374	0
Lake Lascelles*	6,320	1,428	8,052	5,005
Lake Marma*	2,453	509	1,365	9,237
Yarriambiack Creek - Warracknabeal*	18,492	5,101	3,512	16,415
Total	196,088	56,887	78,156	163,189

* These recreational water facilities are within a town boundary/urban area.

The majority of users of the recreational water facilities are from regional Victoria, as shown in Figure 2.2. The distribution of residential locations of day and overnight visitors to the recreational water facilities in 2016-17 was:

- Visitors who live in the same Shire or City as the facility:	26.51%
- Visitors who live in another part of the Wimmera Southern Mallee:	16.27%
- Visitors from other (inland) Country Victoria:	21.19%
- Visitors from other (coastal) Country Victoria:	9.51%
- Visitors from Country South Australia:	4.07%
- Visitors from Melbourne:	10.96%
- Visitors from Adelaide:	4.86%
- Visitors from New South Wales:	2.17%
- Visitors from Queensland:	2.95%
- Visitors from other interstate locations:	0.26%
- Visitors from overseas:	0.46%
- Visitors with no fixed address:	0.79%

Figure 2.2 Residential Location of Recreational Water Visitors



2.2 ECONOMIC CONTRIBUTION

Table 2.2 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, community groups and Committees of Management) contributed an estimated \$6.774 million.
- Recreational water users contributed an estimated \$8.776 million to the local area in which the facility is located
- Businesses in the immediate, and nearby, towns and the flow-on effects from this expenditure, contributed an estimated \$7.769 million to the local municipalities in which the water facilities are located, and a further \$4.218 million to other local government areas in the Wimmera Southern Mallee (mostly Horsham Rural City and, to a lesser extent, Northern Grampians Shire), from the recreational water facility users and suppliers.

The 24 assessed recreational water facilities made a total regional economic contribution of \$27.536 million in 2016-17. This comprised:

- Buloke Shire: \$1.045 million
- Hindmarsh Shire: \$1.302 million
- Horsham Rural City: \$8.442 million (including relevant projects and resource allocations by Wimmera CMA and GWMWater)
- Northern Grampians Shire: \$7.038 million
- West Wimmera Shire: \$2.619 million
- Yarriambiack Shire: \$2.873 million
- Total local contributions: \$23.319 million
- Contributions accruing in other WSM LGAs: \$4.218 million.

Table 2.2 Estimated Expenditure by WSM Recreational Water Facilities Supplier Businesses and Organisations, 2016-17

	Suppliers	Water Users	Businesses	Total
Buloke	\$89,578	\$617,122	\$338,698	\$1,045,398
Hindmarsh	\$219,545	\$642,126	\$439,845	\$1,301,516
Horsham	\$4,386,380	\$1,399,645	\$2,656,421	\$8,442,446
Northern Grampians	\$1,153,469	\$3,216,063	\$2,668,319	\$7,037,852
West Wimmera	\$501,468	\$1,266,739	\$850,953	\$2,619,160
Yarriambiack	\$423,729	\$1,633,884	\$814,961	\$2,872,574
All LGAs	\$6,774,170	\$8,775,577	\$7,769,197	\$23,318,945
Regional Total	\$6,774,170	\$8,775,577	\$11,986,686	\$27,536,434

Lake Fyans, in the heart of the Grampians tourism region, was the water facility generating the largest estimated contribution from visitors and other users, with overnight visitors making the overwhelming majority of this contribution. The Wimmera River at Horsham had the second greatest estimated contribution from users, although the contribution was almost equally shared between overnight and day users. Lake Wallace and Lake Lascelles had the third and fourth largest economic contributions from visitors, respectively, and in both cases, the lakes were rated as the local town's greatest asset 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) were Lake Charlegrark and Green Lake.

These estimates are detailed in Table 2.3. Average daily expenditures by overnight and active day visitors are shown in Figures 2.3 and 2.4. These estimates are average daily expenditure per person per day.

Table 2.3 Estimated Expenditure by Participants at Recreational Water Facilities 2016-17

In-town*	Expenditure Overnight Visitors	Expenditure Active Day Users	Expenditure Passive Day Users	Expenditure Total Day Users	TOTAL
Wimmera River - Horsham*	\$445,839	\$338,050	\$144,398	\$482,448	\$928,288
Green Lake	\$55,081	\$197,662	\$0	\$197,662	\$252,743
Taylor's Lake	\$184,359	\$34,255	\$0	\$34,255	\$218,614
Wimmera River - Dimboola*	\$241,485	\$65,129	\$30,780	\$95,909	\$337,394
Nhill Lake*	\$24,977	\$94,372	\$21,855	\$116,227	\$141,204
Wimmera River - Jeparit and Lake Hindmarsh*	\$103,666	\$40,457	\$19,405	\$59,862	\$163,528
Lake Bellfield*	\$157,181	\$46,285	\$37,105	\$83,390	\$240,571
Lake Fyans	\$2,682,263	\$59,876	\$13,069	\$72,944	\$2,755,208
Lake Lonsdale	\$44,650	\$25,333	\$17,200	\$42,533	\$87,183
Lake Wartook	\$31,321	\$11,000	\$0	\$11,000	\$42,321
Walkers Lake	\$74,437	\$16,343	\$0	\$16,343	\$90,780
Donald Park Lake*	\$118,550	\$48,847	\$6,379	\$55,225	\$173,775
Tchum Lake	\$112,565	\$48,750	\$3,720	\$52,470	\$165,035
Lake Watchem	\$98,552	\$19,125	\$0	\$19,125	\$117,677
Lake Wooroonook	\$129,964	\$30,670	\$0	\$30,670	\$160,634
Lake Wallace*	\$790,565	\$44,430	\$25,097	\$69,527	\$860,092
Lake Charlegrark	\$219,599	\$57,201	\$0	\$57,201	\$276,800
Glenelg River - Harrow*	\$114,906	\$10,988	\$3,953	\$14,941	\$129,847
Brim and Beulah Weirs*	\$337,739	\$92,705	\$0	\$92,705	\$430,444
Lake Lascelles*	\$427,209	\$109,811	\$9,760	\$119,571	\$546,780
Lake Marma*	\$78,461	\$20,589	\$16,626	\$37,214	\$115,676
Yarriambiack Creek - Warracknabeal*	\$458,222	\$48,290	\$34,472	\$82,762	\$540,984
Total	\$6,931,592	\$1,460,168	\$383,817	\$1,843,985	\$8,775,577

Estimates of the direct expenditure by businesses in the Wimmera Southern Mallee municipalities are detailed in Table 2.4.

Table 2.4: Estimated Local Expenditure by Businesses from Recreational Water User Customers, 2016-17

	Supermarket, and grocery stores	Fuel/vehicle servicing	Cafés and Coffee Shops	Bakeries	Butchers	Hotels, motels	Other Retail	Total
Buloke	\$31,589	\$3,646	\$145,165	\$38,122	\$5,319	\$75,211	\$1,037	\$300,090
Hindmarsh	\$39,666	\$1,275	\$154,757	\$2,797	\$7,971	\$131,030	\$7,725	\$345,221
Horsham	\$187,423	\$11,558	\$236,469	\$17,327	\$25,090	\$285,671	\$2,353	\$765,891
Northern Grampians	\$179,552	\$27,342	\$465,506	\$83,009	\$24,623	\$1,291,280	\$99,862	\$2,171,174
West Wimmera	\$66,906	\$7,399	\$205,784	\$33,121	\$84,246	\$221,115	\$16,248	\$634,821
Yarriambiack	\$114,502	\$4,989	\$244,077	\$8,154	\$18,810	\$219,843	\$21,958	\$632,334
Total	\$619,638	\$56,209	\$1,451,759	\$182,531	\$166,059	\$2,224,150	\$149,184	\$4,849,530

Note: Excludes multiplier impacts from supplier businesses of \$2.920 million to reach the total of \$7.769 million in Table 2.2.

Figure 2.3 Overnight Visitors to Recreational Water Facilities (per person per day)

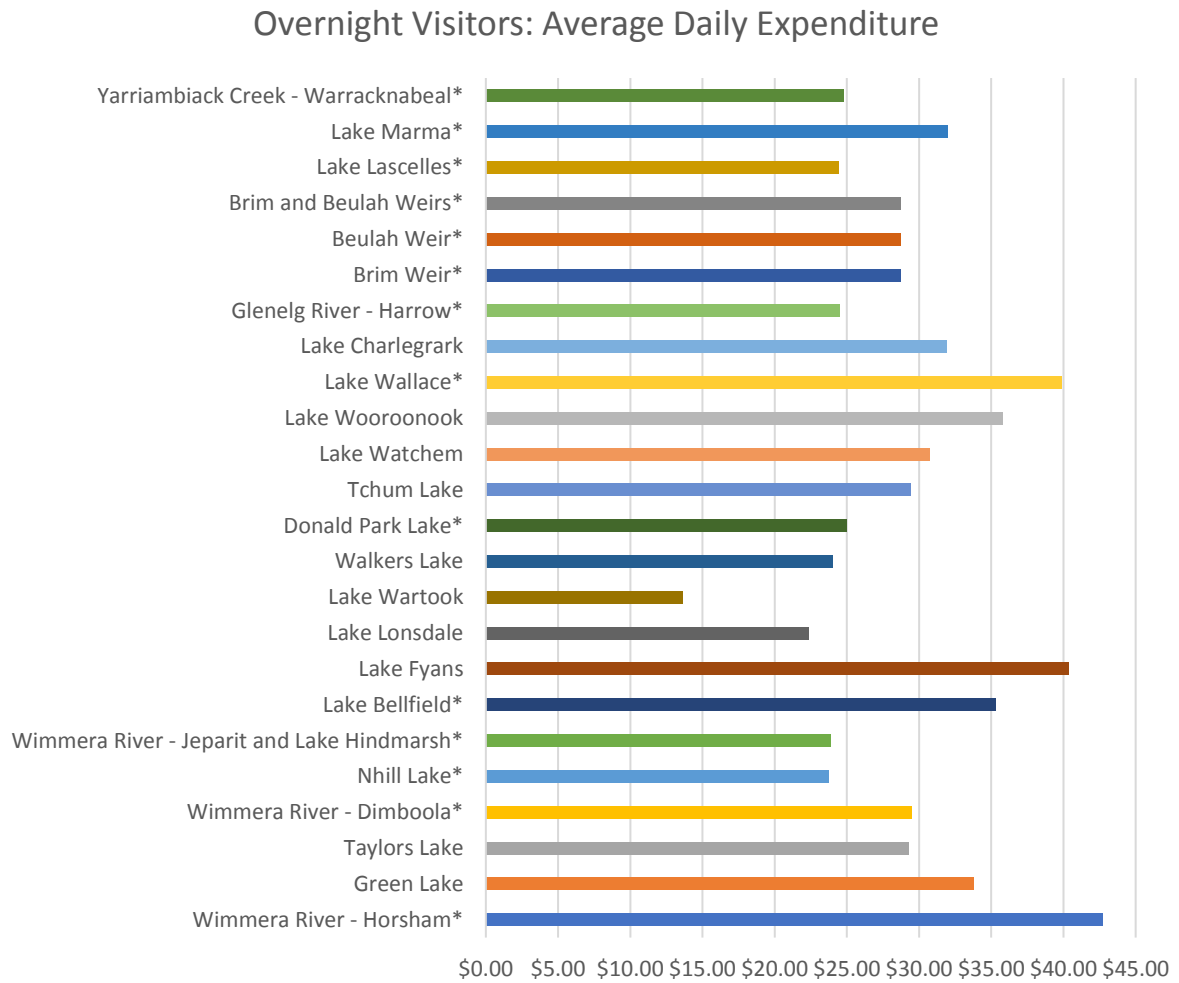
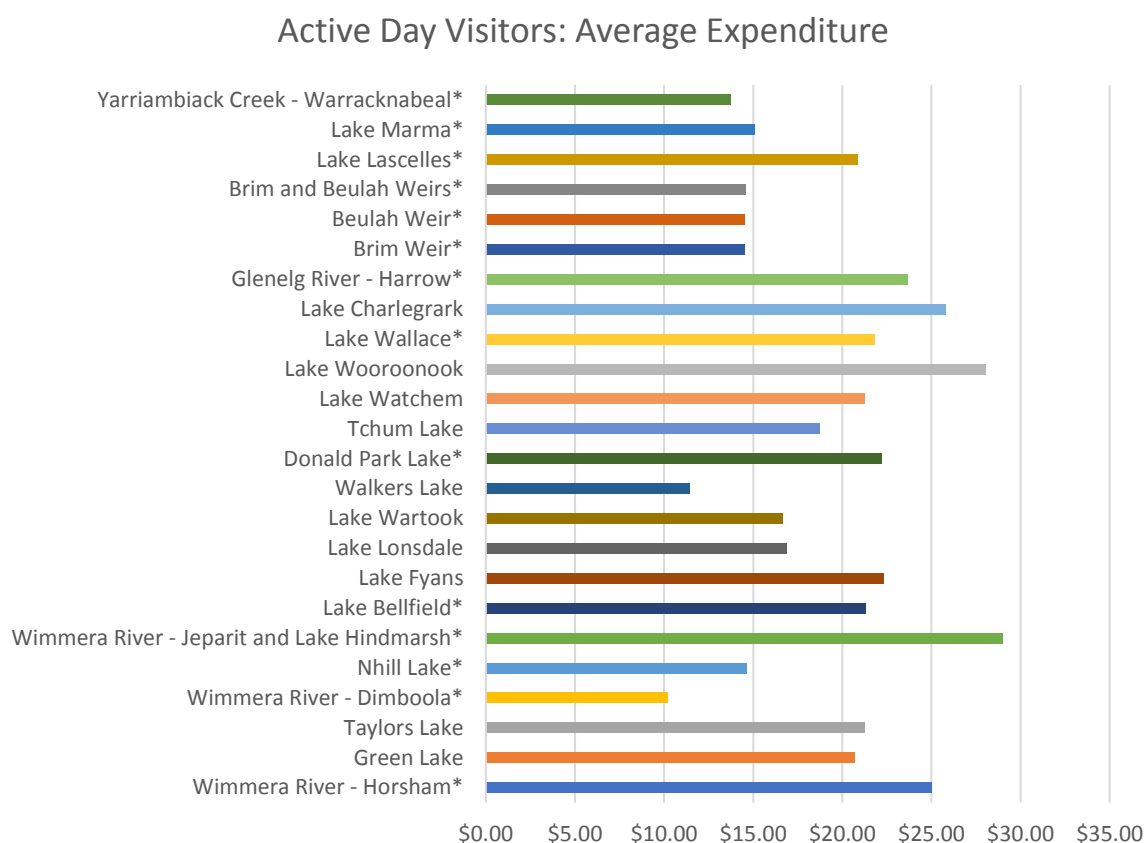


Figure 2.4 Active Day Visitors to Recreational Water Facilities (per person per day)

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.

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 based on the prevention of these physical and mental diseases among the 2016-17 recreational water participation base² and are considered conservative estimates. They are focussed on selected health issues which are evidenced to be attributed to physical inactivity.

Estimated health benefits for 2016-17 are:

- Physical health benefits	\$7,955,132
- Mental health benefits	\$ 618,421
- Total	\$8,573,553.

² Assessment 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 30th 2016 it had an estimated resident population of 5,891 having decreased at an average annual rate of 1.65% over the past decade and decreased by 1.8% 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 29.5% of all workers in 2011. The other major employing industries in Buloke Shire are, in order:

- Health care and social assistance (11.6%)
- Education and training (8.2%).
- Retail trade (7.9%)
- Transport, postal and warehousing (6.2%).

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 20% of all 'suburbs' in Victoria, with:

- Sea Lake being the most disadvantaged, ranking 101st of all 1,516 suburbs in the State.
- Wycheproof ranking 162nd
- Donald ranking 229th
- Birchip ranking 293rd
- Charlton ranking 294th.

The smaller communities of Watchem and Nandaly are relatively advantaged.

Table 3.1: SEIFA Indices³ for Buloke Shire Suburbs, 2011

	Usual Resident Population	SEIFA Score	Ranking within Victoria			Minimum score for SA1s in area ⁴	Maximum score for SA1s in area
			Rank	Decile	Percentile		
Berriwillock	321	979	459	4	31	979	979
Birchip	659	953	293	2	20	951	958
Charlton	1281	953	294	2	20	910	1047
Donald	1692	940	229	2	16	882	1020
Nandaly	228	1033	997	7	66	1033	1033
Sea Lake	614	900	101	1	7	899	900
Watchem	455	1000	648	5	43	1000	1000
Wycheproof	786	925	162	2	11	891	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*. 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.

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, while the basin volume of 700 megalitres is provided by the Wimmera Mallee Pipeline at the highly subsidised cost to the community of \$20 per megalitre, supplemented by rainfall. 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.



³ SEIFA indices are calculated by the Australian Bureau of Statistics using a range of variables on income, employment, housing, etc.

⁴ SA1s are Statistical Areas Level 1 – a 'neighbourhood' scale of geography.

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. During the 2017 socio-economic assessment the Lake was affected by blue-green algae.

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. This profile of users may have been distorted in 2016-17 by the impact of blue-green algae occurrences.

Estimated overnight visitors and day trip users of Lake Wooroonook in 2016-17 are summarised in Table 3.2. These estimates have been developed through interviews on site during March and April 2017, online surveys, and discussions with Wooroonook Committee of Management representatives.

Table 3.2: Estimated Overnight and Day Visitors to Lake Wooroonook, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Total visit nights	Active Day Users
Dec-May	880	4.75	185	3.3	2,904	780
Jun-Nov	220	4.75	46	3.3	726	314
Total	1,100		231		3,630	1,094

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 holds approximately 730 megalitres of water provided by the Wimmera Mallee Pipeline at a cost to the community of \$20 per megalitre, supplemented by rainfall. 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 in 2016-17 are summarised in Table 3.3. These estimates have been developed through interviews on site during March and April 2017, online surveys, and discussions with the Committee of Management/Aquatic Club representatives.

Table 3.3: Estimated Overnight and Day Visitors to Tchum Lake, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Total visit nights	Active Day Users	Passive Day Users
Dec-May	684	2.85	240	4.8	3,283	3,510	910
Jun-Nov	114	2.85	40	4.8	547	0	549
Total	798		231		3,830	3,510	1,459



3.2.3 Lake Watchem

Part of the Djadjawyrybg 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 provided by the Wimmera Mallee Pipeline at a cost to the community of \$20 per megalitre, supplemented by rainfall. 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, for an average of 3.2 nights. At other times, the lake is frequented by grey nomad type caravaners, and an estimated 900 local participants.

Estimated overnight visitors and day trip users of Lake Watchem in 2016-17 are summarised in Table 3.4. These estimates have been developed through interviews on site during March and April 2017, online surveys, and discussions with the Committee of Management representatives.

Table 3.4: Estimated Overnight and Day Visitors to Lake Watchem, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Total visit nights	Active Day Users
Dec-May	585	2.81	208	4.1	2,400	600
Jun-Nov	195	2.81	70	4.1	801	300
Total	781		278		3,201	900

3.2.4 Donald's Foletti Caravan Park Lake

Foletti 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). Non-resident management of the camping ground has recently been taken over by Buloke Shire Council, and there is not yet a well-established visitor profile. Powered sites are available for \$20 per night. As a centrally located, urban lake, many of the visitors are longer-term, staying for extended periods to access facilities in Donald township and/or as a base to visit friends and relatives.

Foletti Caravan Park Lake holds 50 megalitres of water provided by the Wimmera Mallee Pipeline at a cost to the community of \$20 per megalitre, supplemented by rainfall. 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 Foletti Caravan Park Lake in 2016-17 are summarised in Table 3.5. These estimates have been developed through interviews on site during March and April 2017, online surveys, and discussions with Buloke Shire Council representatives.

Table 3.5: Estimated Overnight and Day Visitors to Foletti Caravan Park Lake, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Total visit nights	Active Day Users	Passive Day Users
Dec-May	728	5.20	140	4.0	2,912	1,690	2,730
Jun-Nov	458	5.20	88	4.0	1,830	507	915
Total	1,186		228		4,742	2,197	3,645

3.3 ECONOMIC CONTRIBUTION

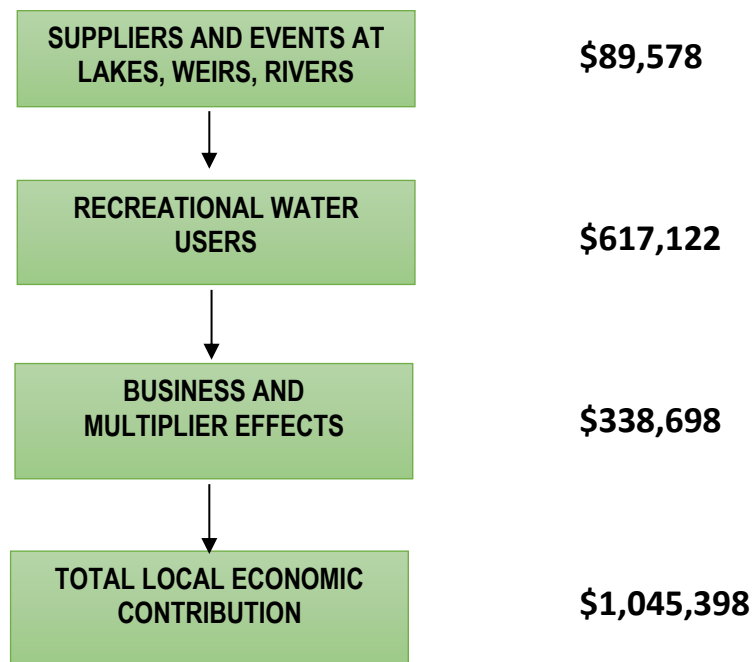
Tables 3.6 and 3.7 and Figure 3.1 detail the estimated 2016-17 economic contribution of the assessed recreational water facilities in Buloke Shire.

Table 3.6: Estimated Economic Contribution 2016-17: Recreational Water Facility Users

	Donald Park Lake*	Tchum Lake	Lake Watchem	Lake Wooroonook
Day Visitors: Active Users (per person day)	\$22.23	\$18.75	\$21.25	\$28.04
Day Visitors: Passive Users (per person day)	\$1.75	\$2.55	\$3.12	\$3.50
Overnight Visitors (per person per day)	\$25.00	\$29.39	\$30.76	\$35.80
Average Length of Stay (overnight visitors)	5.20	2.85	2.81	4.75
Average Expenditure per overnight visit	\$130.00	\$83.84	\$86.52	\$170.06
Visit Nights/ Person Nights	4,742	3,830	3,201	3,630
Overnight Visitors	912	1,343	1,139	764
Active Day Users	2,197	2,600	900	1,094
Passive Day Users	3,645	1,459	0	0
Expenditure Overnight Visitors	\$118,550	\$112,565	\$98,552	\$129,964
Expenditure Active Day Users	\$48,847	\$48,750	\$19,125	\$30,670
Expenditure Passive Day Users	\$6,379	\$3,720	\$0	\$0
Expenditure Total Day Users	\$55,225	\$52,470	\$19,125	\$30,670
TOTAL	\$173,775	\$165,035	\$117,677	\$160,634

Table 3.7: Estimated Economic Contribution 2016-17: Supplier Organisations

Supplier Organisations	Caravan Parks/CoMs/Events
Buloke	
Donald Park Lake	\$27,646
Tchum Lake	\$38,440
Lake Watchem	\$12,493
Lake Wooroonook	\$10,999
Total	\$89,578

Figure 3.1 2016-17 Estimated Recreational Water Local Economic Contribution: Buloke Shire

4. RECREATIONAL WATER FACILITIES IN HINDMARSH SHIRE

4.1 OVERVIEW

Hindmarsh Shire is in the north east 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 2016, Hindmarsh had a population of 5,446⁵, having declined at an average annual rate of 1.16% over the last 10 years. The rate of population decline, however, increased in the last year, when a drop of 1.75 occurred. This is a similar rate of population decline to those experienced in Buloke, 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 2011, although decreasing at a rate of 2.52% per year. Value adding to agriculture is also important, with major duck processing, and grain handling and storage manufacturing businesses. Other significant industries include health services (which is the second largest employing industry, and has been increasing at 1.93% per annum), and retail (the third largest employing industry). 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 57th of all 1,516 suburbs in the State.
- Dimboola ranking 99th
- Nhill ranking 891st
- Rainbow ranking 899th.

Table 4.1: SEIFA Indices for Hindmarsh 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		
Dimboola	1,660	899	99	1	7	802	1014
Jeparit	633	878	57	1	4	799	1008
Nhill	2,280	941	238	2	16	891	1077
Rainbow	740	946	262	2	18	899	1059

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*. 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.

⁵ ABS, Regional Population Growth by LGA 2006 to 2016

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 pools⁶.

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.

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 2 furnished cabins. A further 5 cabins as well as a new recreation room were installed in 2017. 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 proposed *Wimmera River Discovery Trail* walking and cycling trail along the Wimmera River (Stage 1 between Dimboola and Jeparit) 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 are summarised in Table 4.2. These estimates have been developed through interviews on site and in town during March and April 2017, online surveys, and data from Hindmarsh Shire Council, and discussions with the Riverside Holiday Park management.

⁶ Sourced from Dimboola.com.au

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

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Total visit nights	Active Day Users	Passive Day Users
Dec-May	1,506	2.93	515	2.45	3,689	4,550	8,190
Jun-Nov	1,840	2.93	629	2.45	4,508	1,830	5,490
Total	3,346		1,143		8,197	6,380	13,680

4.2.2 Wimmera River Jeparit and Lake Hindmarsh

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. In early 2017, there was insufficient water in Lake Hindmarsh for recreational activities, although it is a popular camping area when there is water. 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 is full (as evident in 2010-11) 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. There are also cabins now available. 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 is the major local event using the river.

Estimated overnight visitors and day trip users of Wimmera River at Jeparit and Lake Hindmarsh in 2016-17 are summarised in Table 4.3. These estimates have been developed through interviews on site and in the towns of Jeparit and Rainbow during March and April 2017, 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

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Total visit nights	Active Day Users	Passive Day Users
Dec-May	811	3.41	238	3.69	2,992	1,030	4,550
Jun-Nov	256	3.41	75	3.69	943	366	2,745
Total	1,066		313		3,935	1,396	7,295

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 there is boating, 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 are summarised in Table 4.4. These estimates have been developed through interviews on site and in town during March and April 2017, online surveys, and discussions with Nhill Caravan Park owners.

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

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Visit nights	Active Day Users	Passive Day Users
Dec-May	409	2.11	194	2.06	842	5,680	7,280
Jun-Nov	103	2.11	49	2.06	212	780	2,745
Total	512		243		1,053	6,460	10,025

4.3 ECONOMIC CONTRIBUTION

Tables 4.5 and 4.6 and Figure 4.1 detail the estimated 2016-17 economic contribution of the assessed recreational water facilities in Hindmarsh Shire.

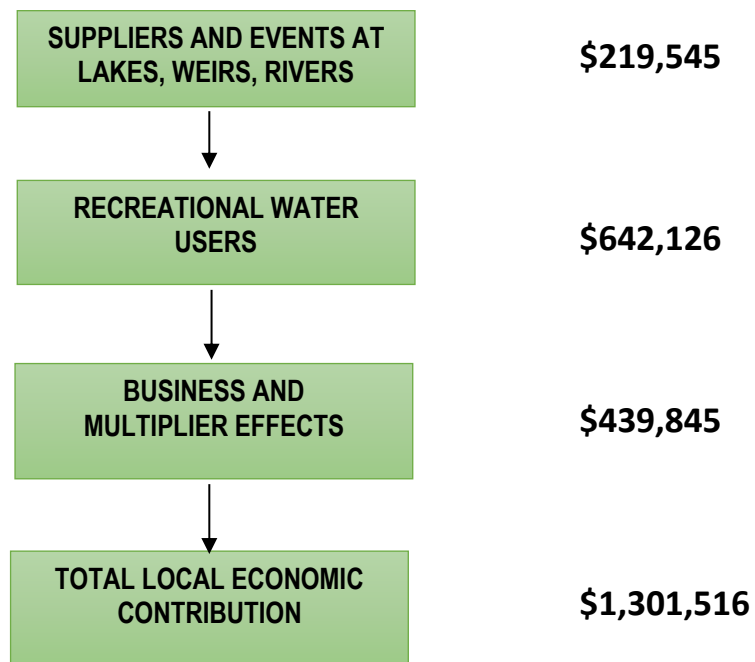
Table 4.5: Estimated Economic Contribution 2016-17: Recreational Water Facility Users

	Wimmera River Dimboola	Nhill Lake	Wimmera River Jeparit and Lake Hindmarsh
Day Visitors: Active Users (per person day)	\$10.21	\$14.61	\$28.98
Day Visitors: Passive Users (per person day)	\$2.25	\$2.18	\$2.66
Overnight Visitors (per person per day)	\$29.46	\$23.71	\$23.87
Average Length of Stay (overnight visitors)	2.93	2.11	3.41
Average Expenditure per overnight visit	\$86.20	\$50.06	\$81.31
Visit Nights/ Person Nights	8,197	1,053	3,935
Overnight Visitors	2,801	499	1,155
Active Day Users	6,380	6,460	1,396
Passive Day Users	13,680	10,025	7,295
Expenditure Overnight Visitors	\$241,485	\$24,977	\$103,666
Expenditure Active Day Users	\$65,129	\$94,372	\$40,457
Expenditure Passive Day Users	\$30,780	\$21,855	\$19,405
Expenditure Total Day Users	\$95,909	\$116,227	\$59,862
TOTAL	\$337,394	\$141,204	\$163,528

NOTE: The economic contribution at Lake Hindmarsh is considerably greater at times when there is a substantial volume of water in the lake.

Table 4.6: Estimated Economic Contribution 2016-17: Supplier Organisations

Supplier Organisations	Caravan Parks/CoMs/Events
Wimmera River - Dimboola*	\$103,133
Nhill Lake*	\$48,429
Wimmera River - Jeparit and Lake Hindmarsh*	\$67,983
Total	\$219,545

Figure 4.1 2016-17 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 38% 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 2016 estimated resident population of Horsham was 19,801⁷ having grown at an average annual rate of 0.54% over the last 10 years and 0.28% in the last year. It was the only municipality within the region to experience population growth. 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 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 agriculture, retail and healthcare and social assistance.

Horsham urban area has high levels of socio-economic disadvantage. Table 5.1 shows that the ‘suburb’ of Horsham ranks 276th most disadvantaged of all 1,516 suburbs in the State. Natimuk ranks 502nd. The smaller ‘suburb’ communities of Horsham Rural City (Brimpaen, Drung and McKenzies Creek) are relatively advantaged.

Table 5.1: SEIFA Indices⁸ for Horsham Rural City Suburbs, 2011

	Usual Resident Population	SEIFA Score	Ranking within Victoria			Minimum score for SA1s in area ⁹	Maximum score for SA1s in area
			Rank	Decile	Percentile		
Horsham	14,280	949	276	2	19	656	1067
Brimpaen	223	1058	1222	9	81	1058	1058
Drung	233	1019	858	6	57	1019	1019
Natimuk	660	984	502	4	34	952	1035
McKenzie Creek	335	1078	1354	9	90	1078	1078

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*. 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.

⁷ ABS, Regional Population Growth 2016 (March 2017)

⁸ SEIFA indices are calculated by the Australian Bureau of Statistics using a range of variables on income, employment, housing, etc.

⁹ SA1s are Statistical Areas Level 1 – a ‘neighbourhood’ scale of geography.

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 (a 1.2km 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.

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. In 2017 there were 1,940 entrants in the Horsham Fishing Competition. 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.

Estimated overnight visitors and day users of the Wimmera River at Horsham in 2016-17 are summarised in Table 5.2. These estimates have been developed through interviews on site and in Horsham business area during March and April 2017, online surveys, and discussions with the Horsham Angling Club, Fishing Competition management, and Wimmera Lakes Caravan Park.

Table 5.2: Estimated Overnight and Day Visitors to Wimmera River at Horsham, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Overnight visitors	Active Day Users	Passive Day Users
Dec-May	1,328	3.07	433	2.9	2,374	9,570	40,950
Jun-Nov	1,087	3.07	354	2.9	1,026	3,940	20,496
Total	2,414		786		3,401	13,510	61,446

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, 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.



Estimated overnight visitors and day users of Green Lake near Horsham in 2016-17 are summarised in Table 5.3. These estimates have been developed through interviews on site and in the Horsham business area during March and April 2017, online surveys, and discussions with the Horsham Angling Club, and other stakeholders.

Table 5.3: Estimated Overnight and Day Visitors to Green Lake, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Overnight visitors	Active Day Users	Passive Day Users
Dec-May	332	3.47	96	2.7	258	8,890	0
Jun-Nov	272	3.47	78	2.7	211	654	0
Total	604		174		469	9,544	0

Some people interviewed during the socio-economic assessment project added qualitative comments to complement the objective data provided. A (verbatim) list of comments from interviewees relating to Green Lake follows. Business operator comments are covered in those summarised for the Wimmera River in Horsham.

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.

The lake has an important role in supplying environmental water to the Wimmera River, 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 camp fires are permitted in designated areas.

Estimated overnight visitors and day users of Taylors Lake in 2016-17 are summarised in Table 5.4. These estimates have been developed through interviews on site and in the Horsham business area during March and April 2017, online surveys, and discussions with the Taylors Lake Committee of Management.

Table 5.4: Estimated Overnight and Day Visitors to Taylors Lake, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Overnight visitors	Active Day Users	Passive Day Users
Dec-May	1,776	3.07	579	3.31	1,917	1,300	0
Jun-Nov	124	3.07	40	3.31	134	312	0
Total	1,900		620		2,051	1,612	0

5.3 ECONOMIC CONTRIBUTION

Tables 5.6 and 5.7 and Figure 5.1 detail the estimated 2016-17 economic contribution of the assessed recreational water facilities in the Horsham Rural City.

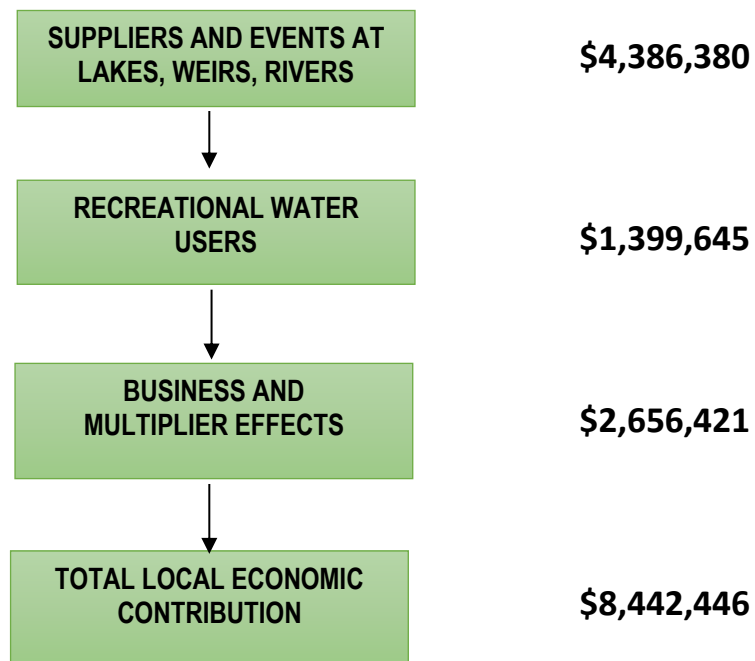
Table 5.6: Estimated Economic Contribution 2016-17: Recreational Water Facility Users

	Wimmera River - Horsham*	Green Lake	Taylors Lake
Day Visitors: Active Users (per person day)	\$25.02	\$20.71	\$21.25
Day Visitors: Passive Users (per person day)	\$2.35	\$3.21	\$3.30
Overnight Visitors (per person per day)	\$42.75	\$33.80	\$29.31
Average Length of Stay (overnight visitors)	3.07	3.47	3.07
Average Expenditure per overnight visit	\$131.10	\$117.40	\$89.90
Visit Nights/ Person Nights	10,429	1,630	6,289
Overnight Visitors	3,401	469	2,051
Active Day Users	13,510	9,544	1,612
Passive Day Users	61,446	0	0
Expenditure Overnight Visitors	\$445,839	\$55,081	\$184,359
Expenditure Active Day Users	\$338,050	\$197,662	\$34,255
Expenditure Passive Day Users	\$144,398	\$0	\$0
Expenditure Total Day Users	\$482,448	\$197,662	\$34,255
TOTAL	\$928,288	\$252,743	\$218,614

Table 5.7: Estimated Economic Contribution 2016-17: Supplier Organisations

Supplier Organisations	Caravan Parks/CoMs/Events
Wimmera River Horsham	\$281,731
Green Lake	\$10,349
Taylors Lake	\$0
Horsham CMA	\$1,321,300
GWMWater	\$2,773,000
Total	\$4,386,380

Figure 5.1 **2016-17 Estimated Recreational Water Local Economic Contribution: Horsham Rural City**



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 11,471¹⁰, having declined slightly over the last ten years (at an average of -0.53% pa). 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 is one of its 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). 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 7.1 shows the SEIFA rankings of the five 'suburbs' compared with all those in Victoria, revealing:

- Stawell is the most disadvantaged, ranking 98th of all 1,516 suburbs in the State.
- St Arnaud is the next most disadvantaged, ranking 108th.

Table 7.1: SEIFA Indices for Northern Grampians 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		
Halls Gap	612	995	604	4	40	967	1024
Marnoo	332	1025	916	7	61	1025	1025
Moyston	357	1009	741	5	49	1009	1009
St Arnaud	2617	903	108	1	8	836	990
Stawell	6158	899	98	1	7	817	1011

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*. 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.

¹⁰ ABS, Regional Population Growth 2016 (March 2017)

6.2 SELECTED RECREATIONAL WATER FACILITIES

6.2.1 Lake Bellfield

Lake Bellfield is located in the eastern Grampians Ranges near Halls Gap and has an inlet from Fyans Creek. Lake Bellfield supplies water to Halls Gap and Pomonal. It is the main source of supply for the Wimmera Mallee Pipeline system, supported by Taylors Lake. The lake is used for recreational activities such as boating, fishing and picnicking.

Natural disasters, such as the Mount Lubra fires in 2006 and the floods of January 2011 badly affected water quality of Lake Bellfield. GWMWater has recorded record high levels of turbidity and water colour in recent times.

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 are summarised in Table 6.2. These estimates have been developed through interviews on site and in Halls Gap during March and April 2017, online surveys, and discussions with the Halls Gap Lakeside Tourist Park management.

Table 6.2: Estimated Overnight and Day Visitors to Lake Bellfield, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Overnight visitors	Active Day Users	Passive Day Users
Dec-May	616	3.78	163	3.6	587	1,804	9,922
Jun-Nov	619	3.78	164	3.6	590	369	4,920
Total	1,236		327		1,177	2,173	14,842

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 times of drought. 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.

Estimated overnight visitors and day trip users of Lake Lonsdale in 2016-17 are summarised in Table 6.3. These estimates have been developed through interviews on site and in Stawell and Halls Gap during March and April 2017, online surveys, and discussions with the Lake Lonsdale Advisory Committee and other stakeholders.

Table 6.3: Estimated Overnight and Day Visitors to Lake Lonsdale, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Overnight visitors	Active Day Users	Passive Day Users
Dec-May	525	4.25	124	3.8	469	1,500	3,500
Jun-Nov	0	4.25	0	3.8	0	0	1,500
Total	525		124		469	1,500	5,000

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 are summarised in Table 6.4. These estimates have been developed through interviews on site and in Stawell and Halls Gap town during March and April 2017, online surveys, and discussions with the Horsham Angling Club.

Table 6.4: Estimated Overnight and Day Visitors to Lake Wartook, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Overnight visitors	Active Day Users	Passive Day Users
Dec-May	821	3.59	228	2.1	480	400	0
Jun-Nov	276	3.59	77	2.1	161	260	0
Total	1,097		305		641	660	0

6.2.4 Lake Fyans

Lake Fyans is part of the GWMWater 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 GWMWater.

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 24 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.

Estimated overnight visitors and day trip users of Lake Fyans in 2016-17 are summarised in Table 6.5. These estimates have been developed through interviews on site and in Stawell and Halls Gap during March and April 2017, online surveys, and discussions with the Lake Fyans Holiday Park, and the Lake Fyans Committee of Management.

Table 6.5: Estimated Overnight and Day Visitors to Lake Fyans, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Overnight visitors	Active Day Users	Passive Day Users
Dec-May	12,813	3.07	4,174	3.34	13,940	1,581	2,255
Jun-Nov	7,086	3.07	2,308	3.34	7,709	1,100	1,230
Total	19,899		6,482		21,649	2,681	3,485

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.

Walkers Lake has a basin volume of 900 megalitres. 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 are summarised in Table 6.6. These estimates have been developed through interviews on site and in Donald during March and April 2017, online surveys, and discussions with the Committee of Management.

Table 6.6: Estimated Overnight and Day Visitors to Walkers Lake, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Overnight visitors	Active Day Users	Passive Day Users
Dec-May	586	4.04	145	3.5	508	1,130	0
Jun-Nov	300	4.04	74	3.5	260	300	0
Total	886		219		768	1,430	0

6.3 ECONOMIC CONTRIBUTION

Tables 6.6 and 6.7 and Figure 6.1 detail the estimated 2016-17 economic contribution of the assessed recreational water facilities in Northern Grampians Shire.

Table 6.6: Estimated Economic Contribution 2016-17: Recreational Water Facility Users

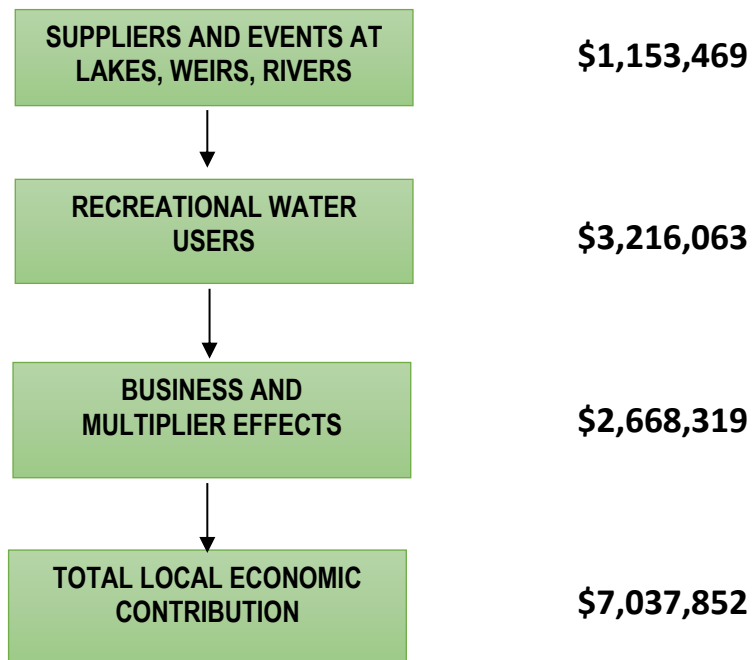
	Lake Bellfield*	Lake Fyans	Lake Lonsdale	Lake Wartook	Walkers Lake
Day Visitors: Active Users (per person day)	\$21.30	\$22.33	\$16.89	\$16.67	\$11.43
Day Visitors: Passive Users (per person day)	\$2.50	\$3.75	\$3.44	\$3.52	\$2.75
Overnight Visitors (per person per day)	\$35.30	\$40.36	\$22.38	\$13.60	\$24.00
Average Length of Stay (overnight visitors)	3.78	3.07	4.25	3.59	4.04
Average Expenditure per overnight visit	\$133.58	\$123.90	\$95.12	\$48.88	\$96.94
Visit Nights/ Person Nights	4,453	66,456	1,995	2,304	3,101
Overnight Visitors	1,177	21,649	469	641	768
Active Day Users	2,173	2,681	1,500	660	1,430
Passive Day Users	14,842	3,485	5,000	0	0
Expenditure Overnight Visitors	\$157,181	\$2,682,263	\$44,650	\$31,321	\$74,437
Expenditure Active Day Users	\$46,285	\$59,876	\$25,333	\$11,000	\$16,343
Expenditure Passive Day Users	\$37,105	\$13,069	\$17,200	\$0	\$0
Expenditure Total Day Users	\$83,390	\$72,944	\$42,533	\$11,000	\$16,343
TOTAL	\$240,571	\$2,755,208	\$87,183	\$42,321	\$90,780

Table 6.7: Estimated Economic Contribution 2016-17: Supplier Organisations

Supplier Organisations	Caravan Parks/CoMs/Events
Lake Bellfield*	\$176,852
Lake Fyans	\$967,380
Lake Lonsdale	\$0
Lake Wartook	\$9,238
Walkers Lake	\$0
Total	\$1,153,469



Figure 6.1 2016-17 Estimated Recreational Water Local 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 2016, West Wimmera had a population of 4,855¹¹. Its population has been declining over many years with the rate of decline slightly slowing. For example, over the last 10 years West Wimmera's population dropped by an average of 1.62% per annum, while over the last year the rate of decline was 1.51%.

The major industry in the Shire is agriculture, encompassing grains, small seeds, wool, beef, pork, olives, vegetables, timber and hay. It contributes more than 40% of jobs in the Shire, although the number of jobs has been decreasing at 1.9% 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 fifteen years to 2011; now 11.2% of all jobs and increasing at 1.9% 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 Gorokey 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 171st of all 1,516 suburbs in the State.
- Apsley ranking 317th
- Kaniva ranking 351st
- Gorokey ranking 530th
- Minimay ranking quite highly at 1,173rd and in more advantaged 20% of suburbs.

Table 7.1: SEIFA Indices for West Wimmera 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		
Apsley	325	958	317	3	21	958	958
Edenhope	975	928	171	2	12	883	1029
Gorokey	619	987	530	4	35	891	1038
Kaniva	1071	962	351	3	24	932	1020
Minimay	252	1052	1173	8	78	1052	1052

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*. 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.

¹¹ ABS, Regional Population Growth 2006-2016

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 redbfin. 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.

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. The Henley-on-Wallace event in February 2017 attracted around 900 participants, which was a 50% increase on the 2016 event (when the lake was dry).

GWM Water (in association with the Department of Environment, Land, Water and Planning and the West Wimmera Shire Council) is currently investigating the feasibility of extending the Wimmera Mallee Pipeline to provide water to the farm gate in the south-east region of the West Wimmera Shire, where groundwater and surface catchments are unreliable. If feasible, a pipeline extension will reach into agricultural areas where traditionally there has been reliable rainfall. The potential piped water supply could also provide ongoing water security for West Wimmera townships and economic, social, recreational and environmental benefits, possibly including some additional provision for part of Lake Wallace.

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. Table 7.2 summarises real estate sales in Edenhope over the period to 2014 to May 2017, and indicates that sales slumped to just two house and land properties in 2015, and that buyers have returned during the 2016-17 year. Indeed, one Edenhope real estate agent reported that property sales in the whole Edenhope district had escalated to 12 sales (11 house and land properties, including rural, and 1 land only) during the period August 2016 to May 2017.

Table 7.2 Property Sales 2014-17: Town of Edenhope

	2014 Sales	2015 Sales	2016 Sales	2017 Sales (5 months)
Total Sales Value (\$000)	681	510	604.5	583
No. Sales	4	2	4	3
Average	\$170,250	\$255,000	\$151,125	\$194,333
Houses	\$658,000	\$510,000	\$598,500	\$583,000
Land	\$23,000	\$0	\$6,000	\$0
Average House	\$219,333	\$255,000	\$199,500	\$194,333

A case study of the Edenhope and District Memorial Hospital provides a good example of the ancillary and indirect impacts that can be derived from a recreational water facility. The hospital is a major employer and service provider to the region, encompassing 18 acute care beds and 2 dialysis units, 22 low care hostel places, and 18 high care nursing home places. Hospital management confirms that it is noticeably easier to attract aged people as residents of the hostel when there is water in Lake Wallace. The hostel (low care facility) and nursing home (high care facility) are both now fully occupied. Prior to water returning to the lake there was an average vacancy rate around 10%.

Even more significant to the Edenhope and District Memorial Hospital is the ability to attract and retain staff. The significance of a lake asset might be less in a community that has other offsetting benefits, or is more geographically connected to other communities. But Edenhope's size and level of isolation are factors which make Lake Wallace such a key asset. The hospital's management records suggest that staff recruitment is 25% more cost efficient when the hospital is able to promote the environmental features and amenities offered by Lake Wallace. The hospital employs 120 people, or 80 full time equivalent staff. The normal staff turnover is high:

- For part-time staff, there is low turnover among the 50% who also work on farms, but the other 50% tend to stay until they can get a job elsewhere, and this takes an average of 2 years. Recruitment costs for these positions are around \$5,000 per person.
- Young professionals recruited under a graduate program stay an average of 1 year in times of drought, and an average of 3 years when the lake has water. There are 6 positions in this category.
- Other staff (60 in total) are replaced on average once every two years at a cost of around \$15,000, or more if a recruitment agency is involved.



Also, due to its location well within the Edenhope township, Lake Wallace has a considerably higher number of passive day users than many other Wimmera Southern Mallee recreational water facilities. Many of these users are residents from around the foreshore and at the hospital complex.

Estimated overnight visitors and day trip users of Lake Wallace at Edenhope in 2016-17 are summarised in Table 7.3. These estimates have been developed through interviews on site and in town during March and April 2017, online surveys, data and discussions with Edenhope residents and community organisations, and discussions with the Edenhope Lakeside Tourist Park management.

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

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Overnight visitors	Active Day Users	Passive Day Users
Dec-May	4,232	4.43	956	2.9	2,772	1,737	7,280
Jun-Nov	2,608	4.43	589	2.9	1,709	301	2,562
Total	6,839		1,545		4,481	2,038	9,842

7.2.3 Lake Charlegrark

Lake Charlegrark is a natural lake located between Kaniva and Edenhope. The nearest township is Gorokey 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 Charlegrark Foreshore Committee believes there is no real need for Wimmera Mallee Pipeline water to top it up. 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 were 10,000 fingerlings released in March 2017 (about 10% survive). 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 has 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 a new amenities building are planned.

An on-site catering business, Charlie's Diner commenced in 2016-17 and trades 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.

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 are summarised in Table 7.4. These estimates have been developed through interviews on site and in nearby towns (Goroke and Minimag) during March and April 2017, online surveys, data from residents, and discussions with the Lake Charlegrark Foreshore Committee.

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

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Overnight visitors	Active Day Users	Passive Day Users
Dec-May	1,478	4.05	364	3.3	1,478	1,662	0
Jun-Nov	269	4.05	66	3.3	219	554	0
Total	1,747		431		1,697	2,215	0



7.2.3 Glenelg River at Harrow

The Glenelg River rises in the Grampians and flows west through Harrow and then south to Casterton and Dartmoor for over 500 km, making it one of the longest rivers in Victoria. There is a water flow measurement point at Harrow.

At Harrow, the river is adjacent to the town centre, and can be accessed from a reserve within 100 metres of the commercial area of town; the Johnny Mullagh Memorial Reserve. This reserve offers camping sites beside the river; unpowered sites for \$8 per night, powered sites for \$16 per night, and a self-contained cabin for \$60 per night. The reserve has barbecues, washing machine, showers and toilets. A large proportion of visitors to the reserve stay in Harrow for events, and town attractions, rather than a focus on the river.

Estimated overnight visitors and day trip users of the Glenelg River at Harrow in 2016-17 are summarised in Table 7.5. These estimates have been developed through interviews on site and in town during March and April 2017, online surveys, data from residents, and discussions with the Johnny Mullagh Park Reserve Committee.

Table 7.5: Estimated Overnight and Day Visitors to Glenelg River, Harrow, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Overnight visitors	Active Day Users	Passive Day Users
Dec-May	1,410	3.45	408	2.6	1,061	438	1,314
Jun-Nov	395	3.45	114	2.6	297	26	499
Total	1,805		522		1,358	464	1,813

7.3 ECONOMIC CONTRIBUTION

Tables 7.6 and 7.7 and Figure 7.1 detail the estimated 2016-17 economic contribution of the assessed recreational water facilities in West Wimmera Shire.

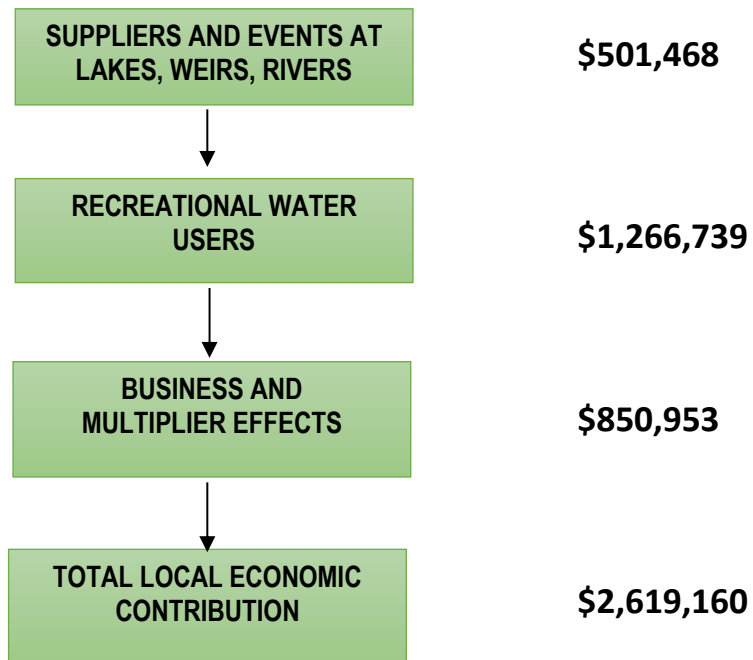
Table 7.6: Estimated Economic Contribution 2016-17: Recreational Water Facility Users

	Lake Wallace*	Lake Charlegrark	Glenelg River - Harrow*
Day Visitors: Active Users (per person day)	\$21.80	\$25.82	\$23.67
Day Visitors: Passive Users (per person day)	\$2.55	\$4.15	\$2.18
Overnight Visitors (per person per day)	\$39.86	\$31.92	\$24.49
Average Length of Stay (overnight visitors)	4.43	4.05	3.45
Average Expenditure per overnight visit	\$176.43	\$129.42	\$84.59
Visit Nights/ Person Nights	19,834	6,879	4,692
Overnight Visitors	4,481	1,697	1,358
Active Day Users	2,038	2,215	464
Passive Day Users	9,842	0	1,813
Expenditure Overnight Visitors	\$790,565	\$219,599	\$114,906
Expenditure Active Day Users	\$44,430	\$57,201	\$10,988
Expenditure Passive Day Users	\$25,097	\$0	\$3,953
Expenditure Total Day Users	\$69,527	\$57,201	\$14,941
TOTAL	\$860,092	\$276,800	\$129,847

Table 7.7: Estimated Economic Contribution 2016-17: Supplier Organisations

Supplier Organisations	Caravan Parks/CoMs/Events
Lake Wallace	\$252,067
Lake Charlegrark	\$220,542
Glenelg River – Harrow	\$28,859
Total	\$501,468

Figure 7.1 2016-17 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.

The total resident population of Yarriambiack Shire has been decreasing by an annual average of 1.26% over the past decade. In 2016, the population was 6,704 (having declined from 7,609 in 2006)¹².

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 145th of all 1,516 suburbs in the State.
- Warracknabeal ranking 161st
- Murtoa ranking 225th
- Hopetoun ranking 264th
- Brim and Beulah ranking 437th and 603rd, respectively.

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	642	995	603	4	40	869	1056
Brim	262	976	437	3	29	976	976
Hopetoun	555	947	264	2	18	933	958
Minyip	669	919	145	1	10	851	1050
Murtoa	992	938	225	2	15	881	1093
Patchewollock	430	981	475	4	32	981	981
Rupanyup	549	966	377	3	25	901	1091
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*. 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.

¹² ABS Regional Population Growth, Australia 2016 (March 2017)

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.

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' is under construction in one section of the lake.

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 much lower occupancy in the winter months.

Estimated overnight visitors and day trip users of Lake Lascelles in 2016-17 are summarised in Table 8.2. These estimates have been developed through interviews on site and in Hopetoun during March and April 2017, online surveys, and discussions with the Lake Lascelles Committee of Management.

Table 8.2: Estimated Overnight and Day Visitors to Lake Lascelles, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Overnight visitors	Active Day Users	Passive Day Users
Dec-May	1,588	4.43	359	2.5	897	7,320	4,550
Jun-Nov	940	4.43	212	2.5	531	732	455
Total	2,528		571		1,428	8,052	5,005

8.2.2 Lake Marma

Lake Marma is a small lake, with a basin volume of 170 megalitres. It 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 are 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 Committee of 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 is working towards establishment of 2-3 cabins on a site next to the lake, where a Scout Hall is located.

Estimated overnight visitors and day trip users of Lake Marma in 2016-17 are summarised in Table 8.3. These estimates have been developed through interviews on site and in Murtoa during March and April 2017, online surveys, and discussions with Lake Marma's Public Park and Gardens Reserve Committee of Management.

Table 8.3: Estimated Overnight and Day Visitors to Lake Marma, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Overnight visitors	Active Day Users	Passive Day Users
Dec-May	637	4.82	132	2.18	408	1,092	6,370
Jun-Nov	223	4.82	46	2.18	101	273	2,867
Total	860		178		509	1,365	9,237

Some of the people interviewed during the socio-economic assessment project made qualitative comments in addition to the objective data provided. A (verbatim) list of comments from interviewees using Lake Marma follows.

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.

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.

Estimated overnight visitors and day trip users of the Brim and Beulah Weir Pools in 2016-17 are summarised in Table 8.4. These estimates have been developed through interviews on site and in Brim and Beulah during March and April 2017, online surveys, and discussions with the Beulah Reserve Committee of Management and Brim Reserve Committee of Management.

Table 8.4: Estimated Overnight and Day Visitors to Beulah and Brim Weir Pools, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Overnight visitors	Active Day Users	Passive Day Users
Beulah							
Dec-May	875	4.43	198	3.5	692	1,176	0
Jun-Nov	115	4.43	26	3.5	91	0	0
Total	990		224		783	1,176	0
Brim							
Dec-May	1,638	3.98	412	3.5	1,440	3,276	0
Jun-Nov	732	2.20	333	2.2	732	1,922	0
Total	2,370		744		2,172	5,198	0

8.2.4 Yarriambiack Creek at Warracknabeal

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. In Warracknabeal, the weir pool and the creek meandering through town are part of the recreational water facilities. Warracknabeal Caravan Park is located on 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, 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, with about 40 members and the club organises 4 fishing competitions during the year each with 30-40 participants.
- Warracknabeal Ski Club, which has family memberships and around 40 boats.
- Woodbine Centre Incorporated, visiting most days with its 12-seater bus.
- Primary, secondary and disabled schools.

Warracknabeal's annual Easter festival, the Y-Fest focuses strongly on activities along the Creek.



Estimated overnight visitors and day trip users of the Yarriambiack Creek at Warracknabeal in 2016-17 are summarised in Table 8.4. These estimates have been developed through interviews on site and in Warracknabeal during March and April 2017, online surveys, and discussions with the Committee of Management.

Table 8.5: Estimated Overnight and Day Visitors to Yarriambiack Creek at Warracknabeal, 2016-17

Season	Occupied Nights	Average Length of Stay	Total Stays	Group Size	Overnight visitors	Active Day Users	Passive Day Users
Dec-May	3,098	3.19	971	3.63	3,520	1,176	0
Jun-Nov	1,391	3.19	436	3.63	1,581	0	0
Total	4,489		1,407		783	1,176	0

8.3 ECONOMIC CONTRIBUTION

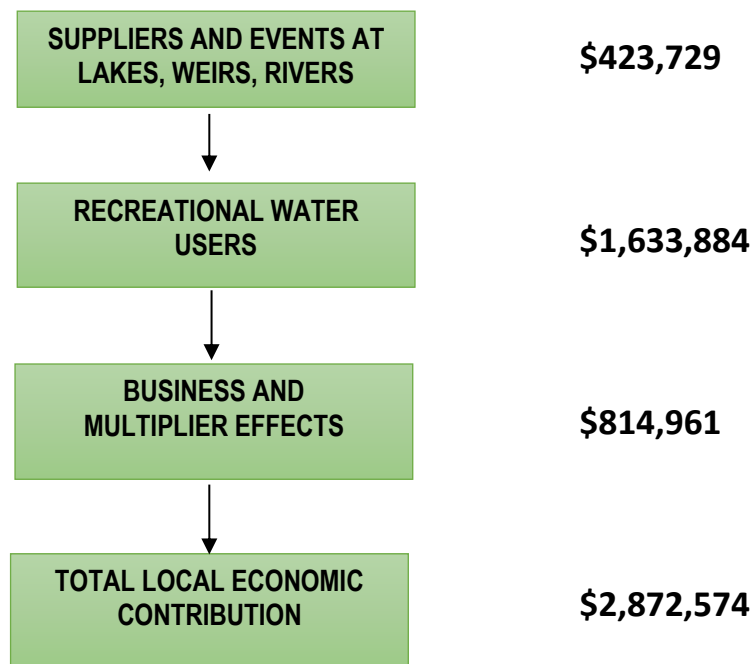
Tables 8.6 and 8.7 and Figure 8.1 detail the estimated 2016-17 economic contribution of the assessed recreational water facilities in Yarriambiack Shire.

Table 8.6: Estimated Economic Contribution 2016-17: Recreational Water Facility Users

	Brim and Beulah Weirs*	Lake Lascelles*	Lake Marma*	Yarriambiack Creek - Warracknabeal*
Day Visitors: Active Users (per person day)	\$14.55	\$20.88	\$15.08	\$13.75
Day Visitors: Passive Users (per person day)	\$2.30	\$1.95	\$1.80	\$2.10
Overnight Visitors (per person per day)	\$28.71	\$24.44	\$31.99	\$24.78
Average Length of Stay (overnight visitors)	3.98	4.43	4.82	3.63
Average Expenditure per overnight visit	\$114.28	\$108.13	\$154.12	\$89.83
Visit Nights/ Person Nights	11,762	6,320	2,453	18,492
Overnight Visitors	2,955	1,428	509	5,101
Active Day Users	6,374	8,052	1,365	3,512
Passive Day Users	0	5,005	9,237	16,415
Expenditure Overnight Visitors	\$337,739	\$427,209	\$78,461	\$458,222
Expenditure Active Day Users	\$92,705	\$109,811	\$20,589	\$48,290
Expenditure Passive Day Users	\$0	\$9,760	\$16,626	\$34,472
Expenditure Total Day Users	\$92,705	\$119,571	\$37,214	\$82,762
TOTAL	\$430,444	\$546,780	\$115,676	\$540,984

Table 8.7: Estimated Economic Contribution 2016-17: Supplier Organisations

Supplier Organisations	Caravan Parks/CoMs/Events
Brim and Beulah Weirs*	\$33,640
Lake Lascelles*	\$111,938
Lake Marma*	\$31,348
Yarriambiack Creek - Warracknabeal*	\$246,804
Total	\$423,729

Figure 8.1: 2016-17 Estimated Recreational Water Economic Contribution: Yarriambiack Shire

9. COMMUNITY AND SOCIAL EFFECTS

9.1 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:

- An average of 4.8 hours per week volunteering for sporting organisations in local communities
- An average of 4.2 hours per week in volunteering for community organisations.
- On a scale of 1 to 7, where 1 means 'totally disagree' and 7 means 'totally agree', the average participant ratings were:
 - 6.9 for the statement that the "weir/lake/river is one of the community's best assets". For this statement, the lowest rating was 6.0 at Wooroonook Lake, and the highest ratings of 6.9 or 7.0 were recorded at 11 of the water facilities.
 - 6.8 for the statement that "community spirit increases when there is a good level of water in the weir/lake/river". For this statement, the lowest rating was 6.2 at Lake Watchem, and the highest ratings of 6.9 or 7.0 were recorded at 9 of the water facilities.
 - 6.7 for the statement that "more people come to town when there is a good level of water in the weir/lake/river". For this statement, the lowest rating was 5.7 at Lake Watchem, and the highest ratings of 6.9 or 7.0 were recorded at 10 of the water facilities.
 - 6.4 for the statement that "There are more social functions in the community when there is a good level of water in the weir/lake/river". For this statement, the lowest rating was 2.9 at Foletti Caravan Park Lake, and the highest ratings of 6.9 or 7.0 were recorded at 3 of the water facilities.
 - 6.4 for the statement that "I tend to stay in the Wimmera Southern Mallee region more often when there is a good level of water in the weir/lake/river". For this statement, the lowest rating was 2.8 at Foletti Caravan Park Lake, and the highest ratings of 6.9 or 7.0 were recorded at 5 of the water facilities.

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 9.1.

Table 9.1 Perceptions of Recreational Water 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
Beulah & Brim	6.2	5.0	6.0	4.9	6.0	4.9	3.8	2.9	3.3	4.1	5.6	6.4	5.3
Dimboola - Wimmera R	5.4	5.2	6.2	5.5	5.6	5.5	4.1	2.4	5.5	4.5	5.3	6.0	4.2
Donald Lake	4.8	6.3	6.3	5.5	4.0	4.0	4.0	1.8	3.7	2.8	3.3	4.3	3.8
Green Lake	6.5	5.2	6.1	5.7	5.6	4.8	4.3	3.8	5.4	3.3	4.4	5.8	4.4
Glenelg River Harrow	6.5	6.8	7.0	6.7	6.8	7.0	2.2	1.8	5.2	4.3	3.9	7.0	6.0
Wimmera River Horsham	6.7	6.2	6.5	5.9	6.1	5.8	4.0	3.7	6.1	4.5	4.5	6.3	5.3
Wimmera River Jeparit	6.5	5.6	6.2	4.7	6.3	4.9	3.3	3.8	5.1	4.7	5.0	6.2	3.5
Lake Bellfield	7.0	6.8	7.0	6.9	6.9	6.9	3.1	2.1	5.8	6.7	5.8	6.8	6.8
Charlegrark	6.5	6.3	6.2	5.7	6.1	6.1	3.7	2.7	5.6	4.6	5.0	6.2	5.1
Lake Fyans	6.8	6.8	6.9	6.8	6.8	6.8	5.7	2.8	6.0	2.9	6.9	6.8	6.6
Lake Lascelles	6.5	6.4	6.3	5.7	6.3	6.4	3.1	2.3	6.2	2.8	4.6	6.6	4.9
Lake Lonsdale	6.2	5.7	6.2	4.8	5.5	5.4	3.9	4.2	5.5	4.5	4.6	6.4	4.6
Lake Wallace	5.8	5.4	5.8	5.2	5.4	5.3	4.4	3.9	5.7	4.2	5.5	5.7	4.6
Lake Wartook	6.9	6.7	6.9	5.2	6.9	6.7	5.6	2.2	1.8	6.5	6.5	6.8	4.8
Lake Marma	6.3	6.7	6.3	5.7	6.7	6.5	2.7	2.8	6.3	5.5	6.0	6.0	5.0
Nhill Lake	6.7	6.4	6.6	6.3	6.7	6.3	2.1	1.9	4.4	1.7	3.3	6.3	4.7
Taylors Lake	6.6	6.5	6.7	5.9	6.3	6.4	3.2	3.1	5.0	2.0	6.4	6.2	5.8
Tchum Lake	4.0	4.0	4.0	3.0	4.0	3.0	1.0	1.0	4.0	1.0	1.0	4.0	3.0
Lake Watchem	5.9	5.5	5.5	5.2	5.5	5.3	3.3	2.9	4.8	5.8	5.3	5.7	4.2
Wooroonook	6.4	6.1	6.1	5.4	5.7	5.5	4.6	2.9	5.5	5.0	4.8	6.0	3.5
Yarriambiack - Warracknabeal	6.9	6.8	6.8	5.6	6.8	6.8	2.3	1.6	5.4	5.6	2.7	7.0	6.1
TOTAL All Facilities	6.4	6.1	6.4	5.7	6.1	5.9	3.7	3.0	5.3	4.1	5.1	6.2	5.0

9.2 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 2016-17 recreational water participation base¹³. 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.

Total recreational water users in 2016-17:

- Overnight visitors:	56,887
- Visit nights:	196,088
- Local active participation:	78,156
- Local passive participation:	163,189
- Total recreational water participation:	437,433
- Estimated number of people involved:	85,135

Table 9.2 Total Objectively Measured Health Benefits (for 2016-17)

	Physical Health Benefits	Mental Health Benefits	Total Health Benefits
All Water Facilities	\$7,955,132	\$618,421	\$8,573,553

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.

Based on the data collected, people (day users and visitors¹⁴) on average, visit the water facilities 14.12 times per year, and on average spend 3 hours per visit. Therefore, if the required level of physical activity for health benefits per year is 260 hours¹⁵; then 42.36 hours (14.12 x 3 hours) is equal to 16.3% of their total physical activity over the year.

The resultant estimated health benefits, by local government area, for 2016-17 are presented in Table 9.3.

¹³ Assessment by Sport Business Partners

¹⁴ The total number of 'Day users' has been calculated based on people who visit the water facilities each day and 'visitors' has been calculated based on the people who stay overnight multiplied by an average of 2.5 nights.

¹⁵ 260 hours per year is the recommended amount of physical activity required to gain health benefits, as deemed by the Department of Health.

Table 9.3 Estimated Physical and Mental Health Benefits, 2016-17

LGA	Water Facility	Physical Health Benefits	Mental Health Benefits	Total Health Benefits
Horsham	Wimmera River-Horsham Green Lake Taylors Lake	\$2,092,979	\$162,713	\$2,255,692
Hindmarsh	Wimmera River-Dimboola Nhill Lake Wimmera River-Jeparit and Lake Hindmarsh	\$1,175,415	\$91,379	\$1,266,795
Northern Grampians	Lake Bellfield Lake Fyans Lake Lonsdale Lake Wartook Walkers Lake	\$1,939,844	\$150,808	\$2,090,652
Buloke	Donald Park Lake Tchum Lake Lake Watchem Lake Wooroonook	\$462,297	\$35,940	\$498,237
West Wimmera	Lake Wallace Lake Charlegrark Glenelg River-Harrow	\$730,301	\$56,775	\$787,076
Yarriambiack	Brim & Beulah Weirs Lake Lascelles Lake Marma Yarriambiack Creek- Warracknabeal	\$1,554,316	\$120,836	\$1,675,152

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”. At the upper end of the scale, this suggests an average of 5 hours per week of moderate intensity activity, such as brisk walking, swimming, cycling or rowing. Table 9.4 shows that this recommended level of activity is well exceeded, on average, by users at every WSM recreational water facility (except Lake Watchem).

Table 9.4 Lifestyle Characteristics of WSM Recreational Water Users (average hours per week dedicated to lifestyle choices)

Recreational Water Facility	Exercising (playing sport, walking, swimming, etc - including any training or practice sessions)	Assisting or supporting a family member, children, or team in their sport or recreation activities	Volunteering for local sporting clubs	Volunteering for other community organisations	Watching television	Keeping up to date online or on social media (facebook, twitter, etc)
Beulah and Brim	5.9	1.8	0.4	9.6	8.7	7.8
Dimboola - Wimmera River	6.7	3.6	3.8	3.3	10.4	12.3
Donald Park Lake	5.4	0.9	0.1	0.6	2.0	2.4
Green Lake	8.4	5.2	2.2	3.5	11.0	5.6
Glenelg River, Harrow	8.4	9.0	2.6	1.6	7.1	2.5
Wimmera River Horsham	9.2	8.8	3.0	3.5	13.3	5.3
Wimmera River Jeparit	9.4	8.2	3.1	3.5	13.3	8.5
Lake Bellfield	6.5	7.0	6.0	8.4	9.5	7.9
Lake Charlegrark	11.1	5.7	6.0	6.2	10.1	6.7
Lake Fyans	7.1	8.6	9.4	4.5	12.7	7.2
Lake Lascelles	7.0	4.6	7.0	4.7	15.6	13.4
Lake Lonsdale	7.6	7.5	6.0	3.0	12.2	10.6
Lake Wallace	10.3	6.5	5.2	2.9	10.2	8.0
Lake Wartook	7.1	7.9	9.6	2.0	11.6	8.7
Lake Marma	9.4	1.1	1.7	0.7	9.8	9.1
Nhill Lake	9.5	7.7	4.1	3.7	19.4	6.8
Taylors Lake	6.0	5.7	3.3	5.5	11.2	8.5
Tchum Lake	7.0	6.8	5.0	5.0	9.8	4.8
Lake Watchem	4.6	5.4	2.5	1.9	15.2	9.8
Lake Wooroonook	8.4	7.2	7.3	7.3	11.2	9.8
Yarriambiack Creek Warracknabeal	10.4	3.0	4.0	8.3	16.8	6.9
TOTAL All Facilities	8.4	6.5	4.8	4.2	11.8	7.7

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 9.5.

Table 9.5 Health and Wellbeing Satisfaction Ratings: WSM Recreational Water Users 2016-2017

	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
Beulah and Brim	7.8	7.8	7.8	8.1	8.9	8.8	7.8
Dimboola - Wimmera River	7.1	6.4	7.0	7.8	7.6	6.7	5.4
Donald Park Lake	7.5	7.7	8.3	8.5	8.8	5.7	6.7
Green Lake	8.1	8.9	8.9	9.2	8.7	8.0	7.9
Glenelg River, Harrow	8.1	8.8	8.9	9.2	9.7	9.2	8.8
Wimmera River Horsham	8.3	9.2	8.4	9.1	9.2	8.2	8.5
Wimmera River Jeparit	8.0	8.1	8.4	8.9	8.9	9.0	8.5
Lake Bellfield	7.8	7.1	7.9	8.9	9.8	9.6	7.9
Lake Charlegrark	8.1	8.4	8.3	8.3	8.9	8.4	7.8
Lake Fyans	7.8	6.3	5.9	8.2	7.9	7.7	6.2
Lake Lascelles	8.0	8.2	8.4	8.8	9.0	8.4	8.2
Lake Lonsdale	7.1	7.6	7.1	7.5	8.8	7.1	6.4
Lake Wallace	7.0	7.8	7.9	7.9	8.8	7.5	7.0
Lake Wartook	6.8	6.8	6.2	7.2	7.4	6.4	6.0
Lake Marma	9.4	9.0	9.3	9.5	9.0	9.0	8.6
Nhill Lake	7.8	8.4	8.6	8.8	8.7	8.5	7.6
Taylors Lake	9.1	9.0	9.1	9.3	9.2	9.1	9.0
Tchum Lake	7.0	6.4	5.6	6.0	7.2	7.0	5.2
Lake Watchem	6.8	7.9	7.6	7.8	8.4	7.5	7.8
Lake Wooroonook	7.2	7.8	7.6	7.9	8.2	7.8	7.8
Yarriambiack Creek Warracknabeal	8.8	9.8	9.8	9.6	9.2	9.9	8.5
TOTAL All Facilities	7.9	8.2	8.3	8.6	8.9	8.4	7.8