3. Landscape, people and economy

Part 3. Landscape, people and economy

Wimmera-Mallee Water Resource Plan applies to surface water and groundwater resources in Wimmera-Mallee water resource plan area. This chapter provides a brief description of the landscape, people and economic drivers in this water resource plan area.

3.1 Climate and landscape

The Wimmera-Mallee region is part of Victoria's north-western plains. The Wimmera-Mallee landscape is dominated by the Grampians Ranges to the south, the broad floodplains of the Wimmera, Avon-Richardson and Avoca River systems, the aeolian (windblown/dune) areas of the Little Desert, Wyperfield and Murray Sunset national parks, and the large terminal lakes including the Ramsar-listed Lake Albacutya, Lake Hindmarsh, Lake Tyrrell and Kerang Lakes.

The highest point in the Grampians (*Gariwerd*) is Mount William (1,167 m AHD), with the surrounding south-eastern area about 500 m AHD. This quickly drops into the lowland areas of the terminal lakes and Mallee, which are less than 100 m AHD (ABS, 2012). **Figure 4** shows the (relative) topography in the Wimmera-Mallee.

The region is comparatively flat and sits on the geologically stable north-western plains of Victoria. The geology includes alluvium and dune deposits in the vast floodplain areas, signifying windblown aeolian landscapes over the Woorinen Formation to the north and Cambrian rock of the Grampians (*Gariwerd*) and St Arnaud groups in the south-east.

The remarkable feature of the landscape is its flatness which, along with the soil and geology, supports numerous lakes. The flat topography was plainly evident in 2011 when the floods that originated in the Grampians (*Gariwerd*) and Pyrenees resulted in inundation for several weeks.

The climate of the Wimmera-Mallee is the hottest and driest in Victoria owing to its inland location.

Temperatures are hot in summer and extremes can be as high as 46°C. In winter, mean maximums are 15°C, but mornings can be cool, with mean minimums of 4°C at Horsham.

The average annual rainfall for the region ranges from up to 700 mm in the Grampians (*Gariwerd*) to less than 300 mm near Mildura. The region's rainfall is lowest in early autumn, and highest in winter (Bureau of Meteorology, 2016).

The central and northern parts of the Wimmera-Mallee have very unreliable surface water flows and groundwater is generally brackish to saline. It was recognised in the 19th century that a reliable water supply was needed to meet the demands of the extensive livestock and cropping activities in the region and the industries, communities and towns that depended on these activities. The water supply system in the Wimmera-Mallee has evolved since then to meet these needs.

A reliable water supply supports the region's economy, people and many social activities. Towns supplied with water from within the Wimmera-Mallee water resource plan area are listed in **Table 2**, while **Table 3** shows towns within the Wimmera-Mallee water resource plan area that source their water from outside the area.

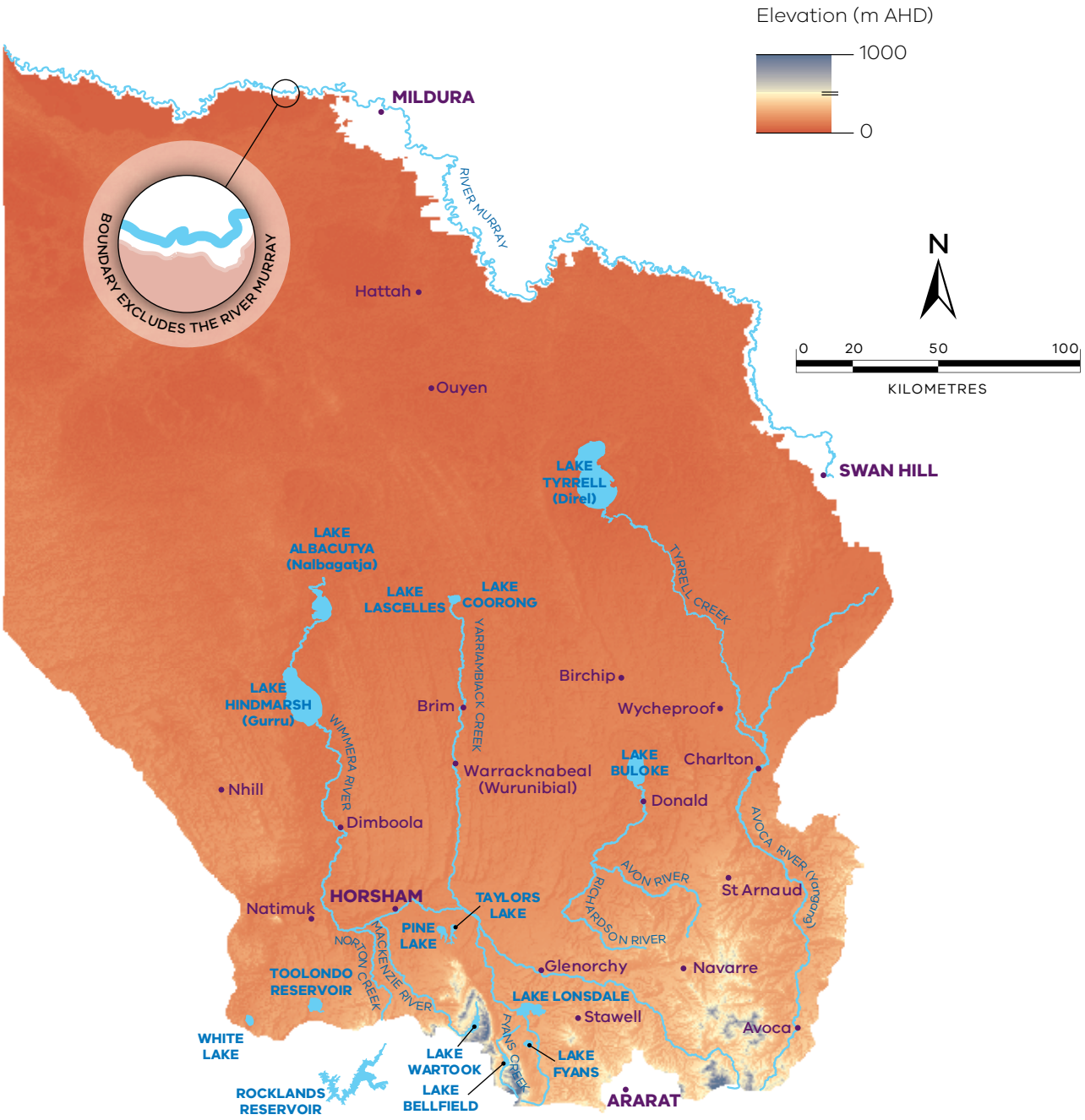

Figure 4: Topography of the Wimmera-Mallee water resource plan area

3.2 Traditional Owners

Water holds a significant place in Aboriginal culture and identity. Water is intimately linked to the health of Country and life. Many Aboriginal cultural sites in the Wimmera-Mallee water resource plan area are on or near waterways, and streams and waterbodies are still important sources of food and medicine. Water also holds a significant connection to Aboriginal women and a special meaning for women's business, although it is not widely documented. Women hold a sacred relationship to land and water, connected to healing, medicines and birthing practices.

Aboriginal communities also hold knowledge of the region's water resources, which are important for many cultural practices and values (See **Part 11**).

3.3 Population and towns

The population of the Wimmera-Mallee is about 60,000[3]. The gross regional product is $6.24 billion and the regional economy provides more than 58,700 jobs. The local government boundaries of the region can be seen in **Figure 5**.

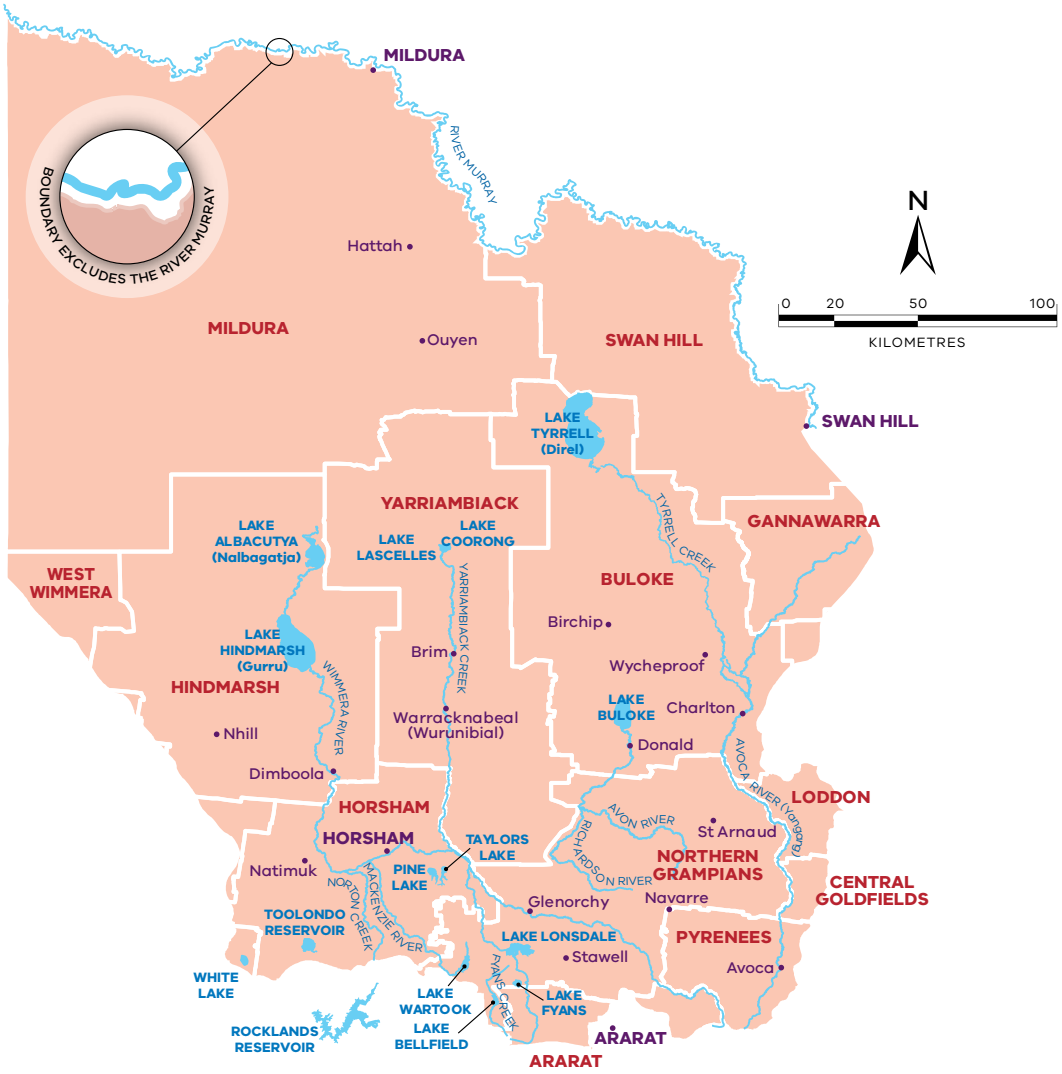

Figure 5: Local government boundaries

3 This figure is based on estimates from municipal councils located wholly within the Wimmera-Mallee water resource plan area.

Table 2: Towns that source their water supply from within the Wimmera-Mallee water resource plan area

Water supply system	Water source	Towns		
Wimmera-Glenelg system headworks	Wimmera and Glenelg basins	Antwerp	Great Western	Rainbow
		Ararat	Hopetoun	Rupanyup
		Beulah	Horsham[1]	St Arnaud
		Birchip	Jeparit	Stawell
		Borung[2]	Jung	Tarranyurk
		Brim	Korong Vale[2]	Warracknabeal
		Charlton	Lascelles	Watchem
		Clear Lake	Marnoo	Wedderburn[2]
		Dimboola	Minyip	Woomelang
		Donald	Murtoa	Wycheproof
		Dooen	Natimuk	Wychitella[2]
		Noradjuha	Yaapeet	Glenorchy
		Pimpinio		
Pyrenees Water Supply system	Hickmans Creek and McLeods Creek	Buangor	Elmhurst	
East Grampians Supply system	Mount William Creek, Masons Creek, Stoney Creek and groundwater	Lake Bolac	Moyston	Willaura
		Glenthompson	Wickliffe	
West Wimmera GMA[3]	Local groundwater	Apsley	Kaniva	Miram
		Edenhope	Kiata	
		Goroke	Lillimur	Serviceton
		Harrow		
Murrayville GMU	Local groundwater	Cowangie	Murrayville	Westmere
		Streatham		
Avoca River	Avoca basin	Amphitheatre	Avoca	Redbank
Unregulated surface water (Franks Gully)	Wimmera basin	Navarre	Landsborough	

1. Supplemented by Mt Zero groundwater.
2. Bulk water supplied to Coliban Water. Supplies to Borung and Wychitella are untreated (not a drinking water supply).
3. These townships are in the West Wimmera GMA but outside the water resource plan area

Table 3: Towns and their water supply systems which are sourced outside the Wimmera-Mallee water resource plan area

Water supply system	Water source	Towns		
Northern Mallee system	Murray system	Chillingollah	Nullawil	Tempy
		Chinkapook	Ouyen	Underbool
		Lalbert	Patchewollock	Ultima
		Manangatang	Sea Lake	Waitchie
		Nandaly	Speed	Walpeup
Wimmera-Mallee Pipeline system	Murray basin	Berriwillock	Culgoa	Nhill
Waranga Western Channel	Goulburn basin	Quambatook		

Dryland grazing and cropping are the dominant land uses and drivers of the regional economy. Private farm water supply systems are not feasible in much of the Wimmera-Mallee water resource plan area because of low and unreliable rainfall and lack of suitable groundwater. These areas depend on the Northern and Wimmera-Mallee pipeline systems, which were built to provide reliable domestic and stock water supplies to farms and towns.

These supply systems were not designed to have the capacity to meet irrigation demand; however, they do meet town, domestic and stock, nominated recreational lakes (e.g. Walkers Lake), mining and environmental (e.g. waterways and wetlands) demands.

Small patches of irrigation exist in the more temperate southern parts of the Wimmera-Mallee water resource plan area. These are supplied mainly from small farm dams, although there are some diversion licences from the upper catchment streams and the Wimmera River, but these are often restricted due to low flow. Groundwater is also used for irrigation mainly around Murrayville.

3.4 Recreation and community values

Rivers, weir pools, storages and lakes are an integral part of community life throughout the

Wimmera-Mallee water resource plan area. They provide social, recreational and environmental benefits for the community and attract tourists. They are also valued as a source of water for firefighting.

Much has been done in the Wimmera-Mallee water resource plan area to improve access to water for recreation. The Wimmera-Mallee is the only region in Victoria with a dedicated recreational water entitlement – a portion of the bulk entitlement held by Grampians Wimmera Mallee Water (GWMWater).

Headworks storages (see **Part 4.7**) are highly valued for recreation as are the nominated recreational lakes, which can receive water under GWMWater's recreational entitlement (see **Figure 41**). Headworks storages with recreational facilities are Lakes Bellfield, Fyans, Lonsdale, Taylors, Green and Wartook, Moora Moora, Toolondo and Rocklands reservoirs. Information such as storages and water levels that are open to the public for recreational activities can be found on the GWMWater website.

An operational review of Wimmera-Mallee system bulk and environmental entitlements by GWMWater in 2013–14 secured additional water for recreation including for Walkers Lake between St Arnaud and Donald (GWMWater, 2014).