

AUSTRALIA



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General

Australia - officially the Commonwealth of Australia - is comprising the mainland of the Australian continent, the island of Tasmania and numerous smaller islands. The neighbouring countries are Papua New Guinea, Indonesia and East Timor in the North; the Solomon Islands and Vanuatu in the North-east; and New Zealand in the South-east. Surrounded by the Indian and Pacific oceans, Australia is separated from Asia by the Arafura and Timor seas, with the Coral Sea lying off the Queensland coast, and the Tasman Sea lying between Australia and New Zealand. The country has an area of 769 Mha (million hectares) with in 2020 a population of 25.5 million, or 0.033 persons per ha (Wikipedia and United Nations, 2019).

Climate and geography

The climate of Australia is significantly influenced by ocean currents, including the Indian Ocean Dipole and the El Niño–Southern Oscillation, which is correlated with periodic drought, and the seasonal tropical low-pressure system that produces cyclones in northern Australia. These factors cause rainfall to vary markedly from year to year. Much of the northern part of the country has a tropical, predominantly summer-rainfall (monsoon). The south-west corner of the country has a Mediterranean climate. The south-east ranges from oceanic (Tasmania and coastal Victoria) to humid subtropical (upper half of New South Wales). Water restrictions are frequently in place in many regions and cities of Australia in response to chronic shortages due to urban population increases and localised drought. Throughout much of the continent, major flooding regularly follows extended periods of drought, flushing out inland river systems, overflowing dams and inundating large inland flood plains, as occurred throughout Eastern Australia in 2010, 2011 and 2012 after the 2000s Australian drought (Wikipedia).

Australia's size gives it a wide variety of landscapes, with tropical rainforests in the North-east, mountain ranges in the South-east, South-west and East, and dry desert in the centre. Eastern Australia is marked by the Great Dividing Range, which runs parallel to the coast of Queensland, New South Wales and much of Victoria.

Schrale and Desmier (1983) describe that in 1829 Charles Sturt recognised the potential of the alluvial river flats for agricultural development. Some fifty years later the first efforts of reclamation were made using comparatively ineffective levee banks that excluded minor floods and permitted grazing for temporary periods. By the turn of the 20th century reclamation began in earnest and in 1929 all suitable swamplands along the downstream reaches of the Murray Darling River had been reclaimed. In 1940 dams across the river mouth were completed to prevent tidal intrusion. Since then the river level between the last two weirs has been kept about one metre higher by controlled releases from reservoirs in the upper river basin.

Existing polders

The Group Polder Development (1982) mentions two polder areas. The first one is a polder of 5000 ha in the mouth of the Ord River. The other concerns a group of 20 polders along the Murray River (Figure 1). Schrale and Desmier (1983) give more detailed information about the 20 polders. They also give estimated salt balances for 12 of the polders (Table I).

General characteristics of the polders in Australia are shown in Table II.

Proposed polders

No proposed polders have been identified.

Pictures of polders

The pictures by Prof. Adriaan Volker are shown in Table III.

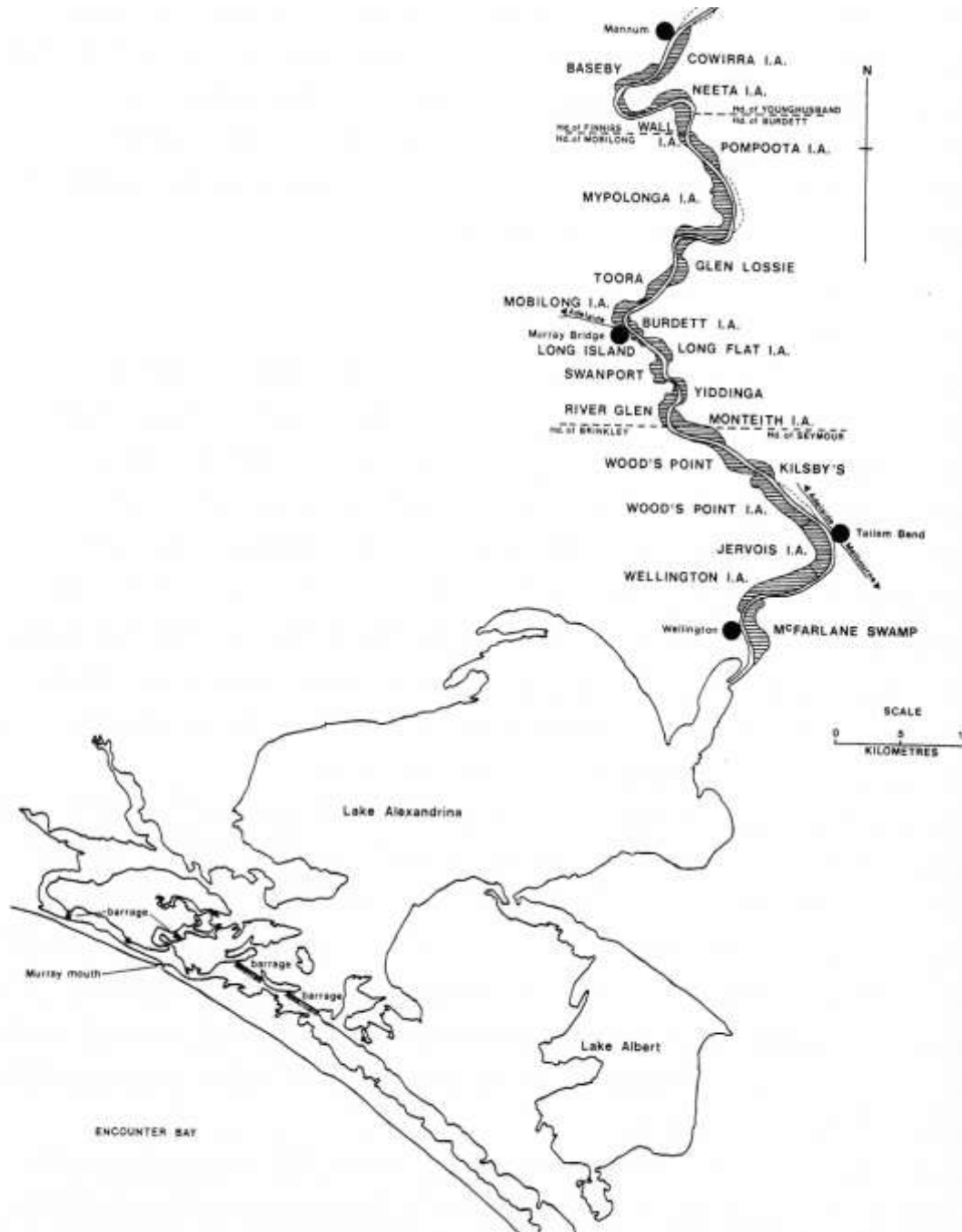


Figure 1. Polders along the Lower Murray River (Schrale and Desmier, 1983)

References

- Group Polder Development, Department of Civil Engineering, Delft University of Technology, 1982. *Polders of the World. Compendium of polder projects*. Delft, the Netherlands
- Schrale, G. and R.E. Desmier, 1983. *Saline groundwater flow into irrigated polders along the Murray River, South Australia*. In: Proceedings International Symposium 'Polders of the World'. International Institute for Land Reclamation and Improvement, Wageningen, the Netherlands.
- United Nations, Department of Economic and Social Affairs, Population Division. 2019. *World Population Prospects, medium prognosis. The 2019 revision*. New York, USA.

Table I. Estimated salt balance and groundwater seepage into polders along the lower Murray River
(Schrale and Desmier, 1983)

Polder	Salt load (tons/ha per year)			Groundwater seepage	
	Applied	Removed	Annual surplus	Rate (mm/day)	Salinity (mS/cm)
Cowirra	6.4	17.6	11.2	0.7	9.9
Neeta	7.3	39.6	32.3	1.7	10.1
Pompoota	6.2	20.7	14.5	0.9	8.6
Wall	8.1	26.1	18.0	1.1	8.6
Mypolonga	8.4	39.9	31.5	1.6	9.8
Mobilong	6.3	79.6	73.2	14.2	--
Burdett	7.6	24.5	16.9	0.5	19.3
Long Flat	7.3	22.5	15.2	0.5	14.9
Monteith	5.8	17.1	11.3	0.3	16.7
Woods Point)					
Jervois)	7.5	16.7	9.2	0.1	34.2
Wellington)					

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Lelystad, February 2022

Table II. General characteristics of existing polders in Australia

Name	Reclamation	Area in ha	Type *)	Latitudes	Longitudes	Elevation in m+MSL	Land use
Polder in mouth of Ord River		5000	RLL	15° 38' S	128° 44' E	35	Agriculture
Polders along Murray River		5200					
• Cowirra			RLL	34° 56' S	139° 19' E	23	Dairy farming
• Neeta			RLL	34° 58' S	139° 19' E	1	Dairy farming
• Pompoota			RLL	35° 00' S	139° 21' E	5	Dairy farming
• Wall			RLL	34° 59' S	139° 19' E	1	Dairy farming
• Mypolonga			RLL	35° 02' S	139° 21' E	1	Dairy farming
• Mobilong			RLL	35° 06' S	139° 17' E	1	Dairy farming
• Burdett			RLL	35° 07' S	139° 17' E	1	Dairy farming
• Long Flat			RLL	35° 08' S	139° 18' E	1	Dairy farming
• Monteith			RLL	35° 11' S	139° 21' E	3	Dairy farming
• Woods Point			RLL	35° 13' S	139° 24' E	2	Dairy farming
• Jervois			RLL	35° 16' S	139° 27' E	2	Dairy farming
• Wellington			RLL	35° 20' S	139° 24' E	1	Dairy farming
Total		10,200					

*) RLL = reclaimed low-lying land; LGS = land gained on the sea; DL = drained lake

Table III. Pictures of polders and lowlands in Australia by Prof. Adriaan Volker













			
A4 002/I.4.2 Prof. Adriaan Volker at excursion	A4 002A/I.4.2A Prof. Adriaan Volker at excursion	A4 003/I.4.3 Prof. Adriaan Volker at excursion	A4 003A/I.4.3A Prof. Adriaan Volker at excursion
			
A4 004/I.4.4 Installation of subsurface pipe drains	A4 005/I.4.5 Installation of subsurface pipe drains	A4 006/I.4.6 Installation of subsurface pipe drains	A4 007/I.4.7 Installation of subsurface pipe drains
			
A4 008/I.4.8 Installation of subsurface pipe drains	A4 009/I.4.9 Installation of subsurface pipe drains	D3 1 001/D.3.1.1 Possibly lowland area, Laeton, 1996	D3 1 002/D.3.1.2 Possibly lowland area, Laeton, 1996

Table III. Pictures of polders and lowlands in Australia by Prof. Adriaan Volker (continued)

			
D3 1 003/D.3.1.3 Possibly lowland area, Laeton, 1996	D3 1 004/D.3.1.4 Possibly lowland area, Laeton, 1996	D3 1 005/D.3.1.5 Possibly lowland area, Laeton, 1996	D3 1 006/D.3.1.6 Possibly lowland area, Laeton, 1996
			
D3 1 007/D.3.1.7 Possibly lowland area, Laeton, 1996	D3 1 008/D.3.1.8 Possibly lowland area, Laeton, 1996	D3 1 009/D.3.1.9 Map of possibly lowland area	D3 1 010/D.3.1.10 Possibly lowland area
			
D3 1 011/D.3.1.11 Possibly lowland area	D3 1 012/D.3.1.12 Possibly lowland area	D3 1 013/D.3.1.13 Possibly lowland area	