

BORDER GROUNDWATERS AGREEMENT REVIEW COMMITTEE

Review of management prescriptions for Province 1 of the Designated Area December 2023

1. INTRODUCTION

This report fulfils the requirement under clause 28(2) and 28(3) of the Border Groundwaters Agreement for the Review Committee to review the management prescription at periods not greater than 5 years.

The Review Committee previously reviewed the management prescriptions for Province 1 in 2018. Province 1 concerns Zones 4A (in part), 3A, 2A, 1A, 3B (in part), 2B and 1B.

2. BACKGROUND

There are two main aquifer systems in the Designated Area comprising the Tertiary Confined Sands Aquifer and the overlying Tertiary Limestone Aquifer. A thin Pliocene Sands Aquifer overlies the Upper Tertiary Aquifer in parts of the Designated Area.

The Tertiary Limestone Aquifer is the principal source of groundwater throughout the Designated Area and has been subdivided into three hydrogeological provinces: Province 1, Province 2 and Province 3. Province 1 occurs largely in the Otway Basin and is characterised by Quaternary calcareous sandstone overlying the Gambier Limestone, forming the unconfined aquifer system called the Tertiary Limestone Aquifer.

The report of a comprehensive technical review of the Tertiary Limestone Aquifer and the Tertiary Confined Sands Aquifer in Province 1 is in preparation but not yet finalised for public release. This review of the management prescriptions has been prepared using the information from that technical review.

3. RESOURCE CONDITION AND TRENDS

3.1 TERTIARY LIMESTONE AQUIFER

Groundwater levels in the Tertiary Limestone Aquifer are measured quarterly and observed levels have shown no increase in rates of decline since the last review in 2018. Long-term declines are observed in most zones, and these are attributed to a combination of groundwater use, plantation forest land use and rainfall variability. Some periods of groundwater level stabilisation have been observed in some zones, however, these are generally associated with reduced extractions. The following summary of groundwater trends by hydrogeological region is from the technical review in preparation.

South Australian Coastal Region

Groundwater level declined nearly 1m between the early 1900s and 2000, after which it has exhibited a relatively stable level (CAR039).

Victorian Coastal Region

Other than short periods of decline and recovery, groundwater levels in this region have been relatively stable since 2000, following a 2m decline during the previous 25 years (101238).

Mount Gambier Region

Two groundwater trend characteristics can be observed in the Mount Gambier region. In areas of city, peri-urban and mixed land use ground water level was in gradual decline from 1972 to 2010 with a 3m lowering, followed by a 0.5m recovery. The rate of decline during the last 20 years has reduced with periods of both recovery and stabilisation being observed (BLA106 and GAM009). When pine plantations are the dominant land use there is a continuing decline of about 4m since the establishment of the groundwater monitoring network in the mid-1970s (GAM079).

Plateau Region

In general, there is a declining groundwater level across the mixed land use parts of the region of between 3m to 4m, with periods of small recovery, or stabilisation before a resumption of a declining trends In the intensely forested areas, groundwater level lowering of 5m has been observed with some temporary limited recovery as forest clear felling has taken place (83447, MIN018 and NAN009). When in decline, the annual recharge events in forested areas are relatively absent when compared to the irrigated areas (MIN018 and NAN009).

Penola Plains Region

Lowering of ground water level in the Coonawarra-Penola area has been in the range of 2m to 3m (CMM022 and PEN015), while the general lowering of groundwater level in the plains immediately west of the Kanawinka Fault in Zone 4A is only 0.5m (JOA008 and JOA026). In grassland areas with limited irrigation, a temporary groundwater level decline between 2005 to 2009 can be observed, with full recovery and a maintained level since 2010 (MON004 and its replacement MON037).

No adverse salinity trends are observed, but the risk of increasing salinity remains a threat in some areas, with particular attention being given to the risks of increased seawater intrusion in Zone 1A.

3.2 TERTIARY CONFINED SAND AQUIFER

Groundwater potentiometric surface trends in the Tertiary Confined Sands Aquifer show some stabilisation following an extended period of decline in Zones 1A to 3A. No adverse salinity trends are observed.

4. REVIEW OF MANAGEMENT PRESCRIPTIONS

There is significant technical work underway in Province 1 of the Designated Area as part of the development of subregional and regional groundwater models that is expected to be completed during 2024. In recognition of the extensive technical work underway in Province 1, the Border Groundwaters Agreement Review Committee is recommending that the management prescriptions remain unchanged for this 5-yearly review. Any changes required to management prescriptions can be undertaken once the technical work has been completed.

Therefore, the current management prescriptions are to be retained as follows in Province 1:

- Permissible Annual Volumes as set out in Table 1
- Allowable Annual Volume for the Tertiary Limestone Aquifer as set out in Table 2
- Permissible potentiometric surface lowering rates as set out in Table 3
- Permissible distances as set out in Table 4
- no permissible rates or levels to be set for groundwater salinity.

Table 1. Permissible Annual Volumes in Province 1 at 1 July 2023

South Australia			Victoria		
Permissible Annual Volume		Zone	Zone	Permissible Annual Volume	
Tertiary Confined Sands Aquifer (ML/y)	Tertiary Limestone Aquifer (ML/y)			Tertiary Limestone Aquifer (ML/y)	Tertiary Confined Sands Aquifer (ML/y)
710	22 102	4A*	-	-	-
1900	24 054	3A	3B*	16 500	1000
2900	25 000	2A	2B	25 000	5100
9200	31 812	1A	1B	45 720	14 500

*These zones are only partially included in Province 1

Table 2: Allowable Annual Volumes for the Tertiary Limestone Aquifer as 1 July 2023

Allowable Annual Volumes	
Sub-zone	Tertiary Limestone Aquifer (ML/y)
1A South	15 000*

*Amended 1 July 2022

Table 3 Permissible potentiometric surface lowering (PPSL) rates as at 1 July 2023

South Australia			Victoria		
Tertiary Confined Sands Aquifer PPSL Rate (m/y)	Tertiary Limestone Aquifer PPSL Rate (m/y)	Zone	Zone	Tertiary Limestone Aquifer PPSL Rate (m/y)	Tertiary Confined Sands Aquifer PPSL Rate (m/y)
0.25	0.25	4A*		-	-
0.25	0.25	3A	3B*	0.25	0.25
0.25	0.25	2A	2B	0.25	0.25
0.25	0.25	1A	1B	0.25	0.25

* These zones are only partially incorporated into Province 1

Table 4. Permissible distances as at 1 July 2023

South Australia			Victoria		
Tertiary Confined Sands Aquifer Permissible distance (km)	Tertiary Limestone Aquifer Permissible distance (km)	Zone	Zone	Tertiary Limestone Aquifer Permissible distance (km)	Tertiary Confined Sands Aquifer Permissible distance (km)
3	1	4A*	-	-	-
3	1	3A	3B*	1	3
3	1	2A	2B	1	3
3	1	1A	1B	1	3

*These zones are only partially incorporated into Province 1

REFERENCE

Border Groundwaters Agreement Review Committee (*in preparation*) *Review of Management Prescriptions in Province 1 of the Designated Area.*