

South Australian – Victorian Border Groundwaters Agreement Review Committee



Twenty Fifth Annual Report

To June 2010

Adelaide and Melbourne

PREFACE

The Border Groundwaters Agreement Review Committee's annual report for 2009-10 fulfils the requirement under clause 30(1) of the Border Groundwaters Agreement to report on its activities during the year to 30 June 2010. This report has been compiled with reference to reports from South Australia and Victoria.

Clause 30(2) requires the Review Committee to forward a copy of the report to the appropriate Minister in each Government.

Section 11 of the Victorian *Groundwater (Border Agreement) Act 1985*, and Section 13 of the South Australian *Groundwater (Border Agreement) Act 1985* provides that the relevant Minister shall cause a copy of the annual report to be laid before the Parliament within fourteen sitting days of the receipt of the report.

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1. The year in summary

Along the South Australian – Victorian border, groundwater is the only reliable water source. It is used extensively in both States for irrigation, industry use and urban water supply, as well as farm stock and domestic use.

While groundwater supplies are relatively secure for the short term, the Border Groundwaters Agreement Review Committee (Review Committee) has sought to improve the technical understanding and management responses affecting the ongoing sustainable and equitable use of groundwater, critical to the region's economy.

Long-term declines in groundwater levels have occurred in many locations in Province 1 and 2 of the Designated Area. Some stabilisation may be emerging in some areas of Province 1.

The following sections identify key aspects for each of the three Provinces within the Designated Area:

Province 1

The Tertiary Limestone Aquifer¹ is a high yielding and renewable resource and is replenished by rainfall. Parts of Province 1 are experiencing long-term declines in groundwater levels in both the Tertiary Limestone Aquifer and the Tertiary Confined Sand Aquifer.² The system is not in balance as outflows and extractions exceed inflows.

The use of the water includes licensed extractions for irrigation and other purposes, and the direct interception and extraction by plantation forests. The generally drier conditions since the mid 1990s are also contributing to the declines. Without a change in the current land and water use, these declines will continue over parts of Province 1 unless there is a significant increase in rainfall over a number of years.

The Review Committee proposed to the States that a new management approach is needed in Province 1 to achieve long-term sustainability (BGARC 2008). This is likely to require a reduction in the area under plantation forestry and a reduction in the volume of groundwater extracted. The most significant deficiency in the current management arrangements is that the Border Groundwaters Agreements (the Agreement) does not account for the impacts of plantation forests on the groundwater resource. The Review Committee proposed that the States develop a consistent approach to account for the water used by plantation forests in the Designated Area. Both States are addressing this issue. South Australia has a regulation and accounting process to manage the impacts of new plantation forests in the lower South East of the State. In Victoria, the issue of plantation forest water accounting and management is being canvassed through the process to prepare the Western Region Sustainable Water Strategy.

The Review Committee is overseeing a joint South Australian-Victorian study funded by the National Water Commission to determine the nature of the interaction between the Tertiary Limestone Aquifer and the Tertiary Confined Sand Aquifer in Province 1. The connection between the aquifers is of interest because the declines in groundwater levels occurring in

¹ The Tertiary Limestone Aquifer is generally the Gambier Limestone in the Otway Basin and the Murray Group Limestone in the Murray Basin (Figure 3)

² The Tertiary Confined Sand Aquifer is the Dilwyn Formation in the Otway Basin and the Renmark Group in the Murray Basin (Figure 3)

the Tertiary Confined Sand Aquifer are similar to those observed in the Tertiary Limestone Aquifer even though there is very little extraction of water from the Tertiary Confined Sand Aquifer. The previous understanding is that the aquifers were not connected. This project will involve drilling bores and undertaking pumping tests to determine the relationship between the two aquifers. The study is due for completion by March 2012 and the results will inform future South Australia - Victoria border groundwater sharing agreements and licensing.

Province 2

The Tertiary Limestone Aquifer groundwater in Province 2 is not being significantly replenished by modern recharge and for water allocation and management purposes it should be considered a non-renewable resource. Groundwater level declines are still continuing in some areas.

In 2007, the Review Committee completed a review of the groundwater resource in Province 2 and recommended that the States develop a policy for the management and use of the resource on the basis that it is non-renewable. Victoria is developing a management strategy for the West Wimmera based on the understanding that the resource is non-renewable. The Review Committee, in consultation with all the relevant regional management authorities, is currently scoping a process to consider managing the groundwater resource as a non-renewable resource

South Australia revised its water allocation plan for the Tatiara Prescribed Wells Area which covers part of Province 2. The plan incorporates the conversion of the area based irrigation allocations to volumetric entitlements and this will greatly aid in the management of groundwater extraction. The Review Committee amended the Permissible Annual Volumes in the relevant zones to assist South Australia to implement this program.

Province 3

The groundwater in Province 3 is not being replenished by modern recharge and has been managed as a non-renewable resource since 2001.

The Review Committee's management review, *Management Tertiary Limestone Aquifer in Province 3 of the Designated Area*, was completed in January 2010. Overall the Tertiary Limestone Aquifer appears to have responded as previously anticipated in respect to drawdowns and salinity. The Committee has recommended to the States that the current management arrangements continue for the time being. No amendments to the management prescriptions are recommended.

South Australia is revising its water allocation plan for the Mallee Prescribed Wells Area which covers part of Province 3. The draft plan proposes a conversion of the area based irrigation allocations to volumetric entitlements. The Review Committee realigned the Permissible Annual Volumes in Province 3 without increasing the aggregate Permissible Annual Volumes for Province 3 to assist South Australia in implementing its program.

2. About the Agreement and the Review Committee

The South Australian –Victorian Border Groundwaters Agreement

The groundwater resource along the South Australian – Victorian border is shared between both States. In recognition of the need to cooperatively manage these resources, the two States entered into the Border Groundwaters Agreement (the Agreement) in 1985. The Agreement was updated in 2006, but both States have now agreed to a full review of the Agreement and its operation.

The Agreement establishes a Designated Area, extending 20 kilometres either side of the border, and from the coast to the River Murray. The Agreement applies specifically to this Designated Area. The Designated Area is divided into 22 management zones with 11 zones in each State (Figure 1).

The Agreement provides that the available groundwater shall be shared equitably between the two States and applies to all existing and future bores within the Designated Area, except domestic and stock bores.

Extraction licences or permits may not be granted or renewed within the Designated Area other than in accordance with the management prescriptions set out in the Agreement. The prescriptions limit water use to a Permissible Annual Volume for total withdrawals from all aquifers or each aquifer, to a permissible rate of potentiometric surface lowering, and to a permissible level of salinity. The prescriptions also provide that, where appropriate, casing of new wells shall be sealed between aquifers to prevent inter-aquifer contamination.

The allocation of water is the responsibility of the licensing agencies in each State, in accordance with the relevant groundwater management plan or water allocation plan prepared under the States' respective water resources legislation.

The approach taken by the States in developing management plans has included objectives to better quantify the resource, to establish appropriate mechanisms for allocating the resource or, if needed, to restrict the use of the resource. Plans are developed through consultative committees to maximise community and industry involvement in making and implementing the arrangements.

The management areas relevant to the Designated Area are set out in Table 1. The locations of the areas are shown in Figure 4.

Table 1 Management areas relevant to the Designated Area

South Australia	Victoria
Lower Limestone Coast Prescribed Wells Area Tatiara Prescribed Wells Area Mallee Prescribed Wells Area Noora Prescribed Wells Area	Murrayville Water Supply Protection Area Neuarpur Water Supply Protection Area Glenelg Water Supply Protection Area West Wimmera Groundwater Management Area (proposed)

Border Groundwaters Agreement Review Committee

The Review Committee, with membership from both States, is established under the Border Groundwaters Agreement as the operating body for the effective implementation and administration of the Agreement.

The Review Committee is required at intervals of not more than five years to review the management prescriptions – that is, the Permissible Annual Volume, the Allowable Annual Volume for sub-zones, the permissible distance, the permissible rate of potentiometric surface lowering (drawdown) and the permissible level of salinity (if any such levels have been declared).

The Agreement provides that the Review Committee shall have the power to alter the permissible distance, Permissible Annual Volume, Allowable Annual Volume, and to declare a period of restriction. The relevant State Ministers have the power to alter the permissible rate of potentiometric surface lowering and the permissible level of salinity, on the recommendation of the Review Committee.

The Agreement provides that the Review Committee may also:

- coordinate, or cause to be carried out, surveys, investigations and studies concerning the use, control, protection, management or administration of the groundwater in the Designated Area;
- make recommendations to the Contracting Governments or to any authority, agency or tribunal of the Contracting Governments concerning any matter which, in the opinion of the Review Committee, may in any way affect the investigation, use, control, protection, management or administration of the groundwater within the Designated Area; and
- review the Agreement and, if in its opinion, amendments thereto are necessary or desirable, make recommendations to the Contracting Governments accordingly.

The Review Committee met seven times during the year:

26 August 2009	Melbourne
10 September 2009	Teleconference
29 October 2009	Adelaide
12 February 2010	Melbourne
15 April 2010	Mount Gambier
23 June 2010	Adelaide
29 June 2010	Teleconference

During the year membership of the Review Committee comprised:

South Australia		Victoria	
Mr N Power	member	Mr R Nott	member
Mr H Hopton	member	Dr J Cooke	member
Ms B Cohen	deputy member	Mr M Burns	deputy member

Mr R Nott was President until February 2010 when Mr N Power assumed the position. Ms E Nelson and Mr D Harvey have provided executive officer support to the Review Committee.

3. General Information

Groundwater resources in the South Australian – Victorian border regions

There are two main aquifer systems along the state border comprising the Tertiary Confined Sand Aquifer and the overlying Tertiary Limestone Aquifer (Figure 3). A thin Pliocene Sands Aquifer may overlie the Upper Tertiary Aquitard.

The Tertiary Limestone Aquifer is the principal source of groundwater throughout the Designated Area, with water being used for a range of purposes – municipal supplies for towns such as Mount Gambier, individual domestic and stock water supplies, industry and irrigation of agricultural crops and recreational grounds.

Groundwater salinity in the Tertiary Limestone Aquifer is mostly less than 3000 ECU (about 1800 mg/L TDS) in the Designated Area, except in the far north where it exceeds 30,000 ECU (about 18,000 mg/L TDS).

In the Designated Area, the Tertiary Limestone Aquifer has been sub-divided into three hydrogeological provinces as shown in Figure 2 and described below:

Province 1 occurs largely in the Otway Basin and is characterised by Quaternary calcareous sandstone overlying the Tertiary Limestone Aquifer (Gambier Limestone) forming one unconfined aquifer system;

Province 2 is located in the Murray Basin where the Tertiary Limestone Aquifer (Murray Group Limestone) is unconfined and either outcrops at the surface, or is overlain directly by the Pliocene Sands Aquifer; and

Province 3 is in an area of the Murray Basin where the Tertiary Limestone Aquifer (Murray Group Limestone) is confined by the Upper Tertiary Aquitard. A thin Pliocene Sands Aquifer can overlie the Upper Tertiary Aquitard.

Management approach

In accordance with its role to advise the States, as outlined in the previous section, the Review Committee has taken the following management approach for each Province.

Tertiary Limestone Aquifer - Province 1

The Tertiary Limestone Aquifer is a high yielding and renewable resource and is replenished by rainfall. Parts of Province 1 are experiencing prolonged declines in groundwater levels, in both the Tertiary Limestone Aquifer and the Tertiary Confined Sand Aquifer. The system is out of balance in that the outflows and extractions exceed inflows.

The use of the water includes both extractions for irrigation and other purposes under licence, and interception and extraction by plantation forests. Groundwater extraction from shallow water tables by plantation forests is likely to be a factor in the groundwater level declines. The drier conditions since the mid 1990s are also contributing to the declines. Without a change in the current land and water use, these declines will continue over parts of Province 1.

The Review Committee proposed to the States that a new management approach is needed in Province 1 to achieve long-term sustainability (BGARC 2008). Achieving a sustainable

level of extraction will likely require reductions in the area under plantation forests and the volume extracted via bores. The most significant deficiency in the current management arrangements is the non-accounting for the extraction impacts of plantation forest on groundwater resources.

The Agreement is silent on accounting for the impacts of land use change on groundwater resources. The Review Committee noted South Australia has included the impacts of plantation forest on groundwater resources in the lower South East in its groundwater management approach where the impacts of new plantation forests are accounted for and managed in Province 1 and the southern portion of Province 2. This has been the case since 2004 for the management of recharge impacts, and since 2007 for the extraction of water from shallow water tables by plantations.

The Review Committee noted Victoria did not account for, or manage, the impacts of plantation forests on water resources.

The Review Committee proposed that the States develop a consistent approach to account for the water used by plantation forestry in the Designated Area. The Review Committee recommended that, in the meantime, the current moratoriums on the issue of new groundwater extraction licences be retained.

Sea water intrusion appears to have occurred in the Tertiary Limestone Aquifer in Sub-zone 1A South as groundwater salinity approximating that of seawater has been detected. The Sub-zone 1A South is considered to be at an increased risk from sea water intrusion if groundwater extractions increase. The Review Committee has divided Zone 1A into two sub-zones to help prevent any further intensification of extractions in Sub-zone 1A South. Setting an Allowable Annual Volume for the southern sub zone allows for the transfer of entitlements out of the risk area to the northern sub-zone.

Tertiary Limestone Aquifer - Province 2

The Tertiary Limestone Aquifer in Province 2 is not being significantly replenished by modern recharge and as such is considered non-renewable for water allocation and management purposes. This is evidenced by the observed declines in groundwater levels of approximately 0.2m/yr since 1996 in the area of concentrated extractions in Zones 5A, 6A, 5B and 6B.

While these declines in groundwater levels appear to be manageable, with respect to the capacity of the resource in the short term, the Review Committee has advised the States of the need to develop a common policy for the long-term management and use of groundwater on the basis that this is a non-renewable resource (BGARC 2007). The Review Committee determined to cap allocations as a precaution against further declines, in the meantime. The Permissible Annual Volumes for Zones 7A, 7B, 8A, and 8B were reduced to the allocated volumes for each zone at that time.

The southern area of Zone 6A is experiencing a continuing trend of a declining water table. The Committee established a sub-zone in Zone 6A. Sub-zone 6A South was established with an Allowable Annual Volume at the level of current allocations. Transfers of entitlement can be made away from the impacted or threatened area, but the volume of allocations allowed in the sub-zone are capped at current allocations, allowing transfers out of the sub-zone. There is no change to the Permissible Annual Volume for Zone 6A.

The Review Committee, in collaboration with the States and the regional water management authorities, is scoping a process by which the potential for a common policy approach across the state border for managing the groundwater resources of the Province 2 Tertiary Limestone Aquifer will be investigated.

Tertiary Limestone Aquifer - Province 3

This groundwater is not being replenished by modern recharge and has been managed as a non-renewable resource since 2001.

The Review Committee's *Management Review Tertiary Limestone Aquifer in Province 3 of the Designated Area* was concluded in January 2010 and the States were advised of the key recommendations.

In summary, the Tertiary Limestone Aquifer appears to have responded as expected to the level of use, in terms of drawdown and salinity. The full potential response of the aquifer is yet to be realised as groundwater extraction in Victoria has been less than Permissible Annual Volume. Further drawdown in groundwater levels are anticipated when groundwater extractions increase.

The Committee's view is that there is no immediate risk of increased groundwater salinity due to either the lateral movement of saline groundwater or the vertical leakage of saline water from the Pliocene Sands Aquifer. There is a need to continue to monitor salinity in the aquifer.

There is potential for localised increased drawdown, which if developed would impact on the users of groundwater for domestic and stock groundwater purposes, increase the risks of partial dewatering of the aquifer or accelerating water quality change. The Committee recommended that States enhance measures to prevent uncontrolled localised drawdown arising from intense groundwater extraction.

The continuations of the present volumes of extractions, for the next 5 to 10 years, will not compromise the quality and availability of this resource. Consequently no amendments are required to the management prescriptions.

The water level and salinity monitoring networks are considered sufficient, although the Review Committee recommended enhancing the observation bore network by placing a bore or bores in the Sunset Country in the south west part of Zone 11B.

The South Australian Government is undertaking a program to convert water licences from area based to volume based. The Committee supports this process. At the request of South Australia, Permissible Annual Volumes for Zones 9A, 10A and 11A, were realigned in preparation for the proposed new water allocation plan for the region. The sum of the Permissible Annual Volumes for the three Zones remained the same. In addition to the conversion of allocations to volumetric entitlements, the new water allocation plan is intended to incorporate a transfer policy to ensure there is no further concentration of extractions at areas considered to be at risk of water level decline.

Tertiary Confined Sand Aquifer

Management prescriptions for the Tertiary Confined Sand Aquifer in the Designated Area remain unchanged since 2001. The volumes available for allocation are based on a proportion of through flow. Due to the extensive regional nature of the Tertiary Confined Sand Aquifer and its hydraulic behaviour, the States extended the approach applied in the Designated Area to the whole aquifer system outside of the Designated Area.

Pliocene Sands Aquifer

The Pliocene Sands Aquifer overlies the Tertiary Limestone Aquifer in the Murray Basin. This is a significant feature in Zone 11A. The groundwater in the Pliocene Sands Aquifer is generally saline in the part of the aquifer within the Designated Area. In 2007, the Review

Committee determined a Permissible Annual Volume for the Pliocene Sand Aquifer in Zone 11A to provide for salinity mitigation extractions for the Murtho Salt Interception Scheme.

Permissible Annual Volumes, Allocations and Volumes Extracted

The Permissible Annual Volumes for each aquifer in each zone at 30 June 2010 are set out in Table 2.

A number of changes were made to the prescriptions during the year and these are further explained at the end of this section in Tables 9A, 9B and 9C.

Table 2: Permissible Annual Volumes at 30 June 2010

South Australia				Victoria		
Permissible Annual Volume			Zone	Zone	Permissible Annual Volume	
Pliocene Sands Aquifer (ML/yr)	Tertiary Limestone Aquifer (ML/yr)	Tertiary Confined Sand Aquifer (ML/yr)			Tertiary Limestone Aquifer (ML/yr)	Tertiary Confined Sand Aquifer (ML/yr)
2,144	3700	0	11A	11B	1823	0
	14000	320	10A	10B	6720	560
	11206	570	9A	9B	5960	630
	6309	340	8A	8B	6760	330
	10270	350	7A	7B	6600	350
	8850	360	6A	6B	9838^	360
	18943	540	5A	5B	11949*	570
	22102	710	4A	4B	14000	300
	24054	1900	3A	3B	16500	1000
	25000	2900	2A	2B	25000	5100
	31812	9200	1A	1B	45720	14500

Note ^: Effective from 15 July 2010 the 6B Tertiary Limestone Aquifer Permissible Annual Volume is 10811 ML

Note *: Effective from 15 July 2010 the 5B Tertiary Limestone Aquifer Permissible Annual Volume is 12201 ML

Allocations and use for the Tertiary Limestone Aquifer, the Tertiary Confined Sand Aquifer and the Pliocene Sands Aquifer are listed in Tables 3, 4 and 5, respectively. Note that the 'volume extracted' is the volume of groundwater extracted under a permit/licence and does not take into account the volume extracted for domestic and stock use or the impacts of plantation forests. The Agreement does not apply to bores for domestic and stock purposes.

Table 3: Permissible Annual Volumes, Volumes Allocated and Volumes Extracted for the Tertiary Limestone Aquifer at 30 June 2010

South Australia					Victoria				
Tertiary Limestone Aquifer				Zone	Zone	Tertiary Limestone Aquifer			
Permissible Annual Volume (ML/yr)	Licensed Allocations					Permissible Annual Volume (ML/yr)	Licensed Allocations		
	Licences	Volume Allocated (ML)	Volume Extracted (ML)	No. of Licences	Volume Allocated (ML)		Volume Extracted (ML)		
3700	16	6627	3360	11A	11B	1823	3	1600	812
14000	49	8519	9096	10A	10B	6720	23	6358	4157
11206	10	11768	8925	9A	9B	5960	3	5000	380
6309	39	6034	1142	8A	8B	6760	7	2538	1768
10270	89	7899	6265	7A	7B	6600	15	5692	670
8850	50	8761	5955	6A	6B	9838	14	9838^	4217
18943	130	18943	12716	5A	5B	11949	36	11949*	6455
22102	172	22102	12641	4A	4B	14000	6	2339	78
24054	260	24054	12153	3A	3B	16500	5	515	66
25000	125	19976	11212	2A	2B	25000	39	24127	4051
31812	353	31812	23611	1A	1B	45720	16	4409	2021

Note ^: Effective from 15 July 2010 the 6B Tertiary Limestone Aquifer Permissible Annual Volume is 10811 ML

Note *: Effective from 15 July 2010 the 5B Tertiary Limestone Aquifer Permissible Annual Volume is 12201 ML

Table 4: Permissible Annual Volumes, Volumes Allocated and Volumes Extracted for the Tertiary Confined Sand Aquifer at 30 June 2010

South Australia					Victoria				
Tertiary Confined Sand Aquifer				Zone	Zone	Tertiary Confined Sand Aquifer			
Permissible Annual Volume (ML/yr)	Licensed Allocations					Permissible Annual Volume (ML/yr)	Licensed Allocations		
	No. of Licences	Volume Allocated (ML)	Volume Extracted (ML)				No. of Licences	Volume Allocated (ML)	Volume Extracted (ML)
0	0	0	0	11A	11B	0	0	0	0
320	0	0	0	10A	10B	560	0	0	0
570	0	0	0	9A	9B	630	0	0	0
340	0	0	0	8A	8B	330	0	0	0
350	0	0	0	7A	7B	350	0	0	0
360	0	0	0	6A	6B	360	0	0	0
540	0	0	0	5A	5B	570	0	0	0
710	1	63	23	4A	4B	300	0	0	0
1900	2	1031	0	3A	3B	1000	0	0	0
2900	3	1455	15	2A	2B	5100	0	0	0
9200	4	1421	690	1A	1B	14500	0	0	0

Table 5: Permissible Annual Volumes, Volumes Allocated and Volume Extracted for the Pliocene Sands Aquifer at 30 June 2010

South Australia				
Pliocene Sands Aquifer				
Permissible Annual Volume (ML/yr)	Licensed Allocations			Zone
	No. of Licences	Volume Allocated (ML)	Volume Extracted (ML)	
2144	1	2144	0	11A

Many of the zones are fully committed in the Tertiary Limestone Aquifer (Table 3), in that the volumes licensed are approaching the Permissible Annual Volumes. Points of interest include:

- A moratorium on new licences and permanent transfers of groundwater entitlements remains in place for Zones 1B to 9B under Victoria's water legislation.
- The recently adopted Tatiara Water Allocation Plan, which includes an area from Zone 7A to Sub-zone 9A South, includes transition provisions for irrigators to adapt to the newly converted volumetric entitlements. This is through a stepped process that results in all the allowable volumes returning to the level of allocations existing when the water allocation plan was adopted. This level will be attained on 1 July 2012 after the initial temporary increase being made during 2009-2010 year.
- There is un-allocated water in Zone 2A, but this is held in the South Australian Minister's reserve.
- No commitments of new water allocations were made during the year.
- The volume of groundwater extracted is similar or less than the extractions in the previous year. The use does not exceed the Permissible Annual Volumes or the Allowable Annual Volumes.
- A key objective of the water allocation planning processes, currently occurring, will ensure that all entitlements are expressed in discrete volumes.
- All permitted/licensed extraction in the Designated Area is metered.

The volumes extracted from the Tertiary Limestone Aquifer for each zone, including the declared sub-zones, are listed in Table 3. The 'volume extracted' is volume of groundwater extracted under permit/licence and does not take into account the volume extracted for domestic and stock use or the impacts of plantation forests.

There is little groundwater extraction from the Tertiary Confined Sand Aquifer and the Pliocene Sands Aquifer. Allocations and use for the Tertiary Limestone Aquifer and the Pliocene Sands Aquifer are listed in Tables 4 and 5 respectively.

While the Agreement does not apply to bores for domestic and stock purposes, the large number of bores in the Designated Area indicates the important role groundwater plays for these purposes. The estimated number of domestic and stock bores for each zone is listed in Table 6.

Table 6: Number of domestic and stock bores

South Australia		Victoria	
Number of Domestic and Stock Bores^	Zone	Zone	Number of Domestic and Stock Bores*
16	11A	11B	17
166	10A	10B	243
25	9A	9B	47
62	8A	8B	113
749	7A	7B	104
391	6A	6B	56
1370	5A	5B	162
896	4A	4B	339
1155	3A	3B	79
632	2A	2B	577
1648	1A	1B	625

Note ^: The numbers of domestic and stock bores are derived from spatial analysis of the State SA GEODATA borehole records. It does not necessarily indicate the wells in use

Note *: The numbers of domestic and stock bores are best estimates made in 2004, based on State database records.

Permissible Distance from the border

The Permissible Distance is the distance from the border within which all applications for a permit or licence must be forwarded to the Review Committee for approval. The Permissible Distances are specified in Table 7.

There was one application for the Review Committee to consider during the year in Zone 6A for a replacement bore.

Table 7: Permissible Distance at 30 June 2010

South Australia		Victoria	
Distance (km)	Zone	Zone	Distance (km)
3	11A	11B	3
3	10A	10B	3
1	9A	9B	1
1	8A	8B	1
1	7A	7B	1
1	6A	6B	1
1	5A	5B	1
1	4A	4B	1
1	3A	3B	1
1	2A	2B	1
1	1A	1B	1

Permissible Potentiometric Surface Lowering

The Agreement provides for a rate of drawdown that must not be exceeded. The observed rates of decline (as determined by the Review Committee method) and the prescribed permissible potentiometric surface lowering rates for each zone are shown in Table 8.

Both Ministers agreed with the Review Committee's recommendations to alter the permissible rates of potentiometric surface lowering for zones 5A, 5B and 6B, and to sub-zone 6A with different rates for each of the new sub-zones. These amendments came into effect during the year. The changes do not affect licence holders.

Table 8: Permissible Potentiometric Surface Lowering Rates at 30 June 2010

South Australia		Victoria	
Rate (m/yr)	Zone	Zone	Rate (m/yr)
0.65	11A	11B	0.65
0.65	10A	10B	0.65
0.65	9A	9B	0.65
0.05	8A	8B	0.65
0.05	7A	7B	0.05
0.05	6A North	6B	0.2
0.02	6A South		
0.25	5A	5B	0.2
0.25	4A	4B	0.25
0.25	3A	3B	0.25
0.25	2A	2B	0.25
0.25	1A	1B	0.25

Permissible Salinity

Following the reviews of Province 1, Province 2 and Province 3 (BGARC 2008, BGARC 2007, BGARC 2010) the Review Committee has determined that there is no need to set Permissible Salinity level at this time.

Adjustments to Permissible Annual Volumes and Available Annual Volumes

The Committee adjusted Permissible Annual Volumes for a number of zones in this reporting year. These adjustments are outlined in Tables 9A, 9B and 9C. The reasons for these changes are outlined in the following sections:

Administrative adjustments

The Permissible Annual Volumes in Zones 1A, 3A, 4A, 5A and 7A were adjusted during the year ending 30 June 2010. These adjustments were considered necessary to accommodate *bona-fide* pre-existing entitlements at the time of adoption of the relevant water allocation plans in 2001. The Review Committee is satisfied that the amendments are justified as they

reflect the historical entitlements and are not additional allocations of groundwater. (reference Appendix A)

In Zones 5B and 6B, improved location procedures using GPS technology, identified the location of licensed bores previously considered to be outside of the Designated Area, to be within the Designated Area. An adjustment to the Permissible Annual Volumes was required to accommodate the previously excluded licensed volumes otherwise the water licences could not be renewed. This required an upward adjustment to the Permissible Annual Volumes in Zones 5B and 6B. The changes became effective on 15 July 2010. The Committee was advised that the Permissible Annual Volume in the West Wimmera GMA, that includes Zones 5B and 6B remained unchanged, and hence no additional water was allocated. (reference Appendix B)

The administrative adjustments made during the year ending 30 June 2010 are listed in Table 9A.

South Australian volumetric conversion

In Zones 7A and 8A and Sub-zone 9A South the Permissible Annual Volumes and the Allowable Annual Volume have been increased to facilitate the transition to a volumetric entitlement regime by irrigators in these areas. This is a temporary measure and the Permissible Annual Volumes and the Allowable Annual Volume will be reduced in annual steps until reaching the pre-existing values on 1 July 2012. The stepped Permissible Annual Volume adjustments are set out in Table 9 B. (reference Appendix C)

Creation of sub-zones

Following the Review Committee's reviews (BGARC 2007, BGARC 2008) the Committee determined that there were risks of intensification of extractions in Zones 1A, 6A and 9A. To prevent this from occurring the Review Committee established sub-zones and set Allowable Annual Volumes for the sub-zones at the existing allocations. (reference Appendix E)

The Permissible Annual Volumes for Zones 10A and 11A and Sub-zone 9A North were realigned in preparation for the proposed new water allocation plan for the region. There was no change to the aggregate of the volumes available for allocation. The realignment will assist targeted management through a new water allocation plan with volumetric allocations replacing the current area based entitlements and a transfer policy to ensure there is no increased concentration of extractions at areas considered to be risk of water level decline. (reference Appendix D)

The Allowable Annual Volumes are summarised in Table 9C and the boundaries of the sub-zones are set out Figure 7.

Table 9A: Permissible Annual Volume adjustments for the Tertiary Limestone Aquifer during 2009-2010

South Australia			Victoria		
Permissible Annual Volume for Tertiary Limestone Aquifer (ML/yr)				Permissible Annual Volume for Tertiary Limestone Aquifer (ML/yr)	
At 30 June 2009	At 30 June 2010	Zone	Zone	At 30 June 2009	At 30 June 2010
6861	3700	11A			
9400	14000	10A			
11595	11206*^	9A			
7700	6309*	8A			
7500	10270*	7A			
8850	8850^	6A	6B	9838	9838 #
18500	18943	5A	5B	11949	11949 #
20000	22102	4A			
24000	24054	3A			
30900	31812^	1A			

Note ^: Zones divided into two sub-zones. Refer to Table 2B for the Allowable Annual Volume for the relevant sub-zone.

Note *: Refer to Table 2C for stepped reductions to 1 July 2012.

Note #: Alteration of PAV in Zones 6B, 10811 ML and 5B, 12201 ML. became effective from 15 July 2010

Table 9B: Stepped Permissible Annual Volume and Allowable Annual Volume adjustments for the Tertiary Limestone Aquifer 2009-2012

South Australia					
Permissible Annual Volumes and Allowable Annual Volumes for Tertiary Limestone Aquifer (ML/yr)					
Zone	At 30 June 2009	At 15 October 2009*	Effective 1 July 2010^	Effective 1 July 2011	Effective 1 July 2012
9A	11595	11206	10858	10509	10160
Sub-zone 9A North		(2400)*	(2400)	(2400)	(2400)
Sub-zone 9A South		(8806)*	(8458)	(8109)	(7760)
8A	7700	6309	5824	5339	4854
7A	7500	10270	9346	8803	8259

Note *: Advised by a Gazette notice on 15 October 2009.

Note ^: On 1 July, a further Gazette notice advised the reduction steps to apply at the 1st of July in 2010, 2011 and 2012. These also incorporated the administrative adjustments for the recognition of pre-existing allocations.

Note *: Bracketed values are Allowable Annual Volumes that apply to the 9A Sub-zones

Table 9C: Allowable Annual Volume adjustments for the Tertiary Limestone Aquifer for year ending 30 June 2010

South Australia				
Permissible Annual Volume and Allowable Annual Volume for Tertiary Limestone Aquifer (ML/yr)				
Zone	Zone at 30 June 2009 PAV	Zone at 30 June 2010 PAV	Sub-zone	Sub-zone at 30 June 2010 AAV
9A	11595	11206	9A North	2400
			9A South	8806
6A	8850	8850	6A South	4658
1A	30900	31812	1A South	12507

Note: In the case of Zone 1A and 6A, the difference between the Zone Permissible Annual Volume (PAV) and the Sub-zone Allowable Annual Volume (AAV) for the named sub-zone is the allocation available in the remaining sub-zone of the subject Zone (Sub-zones 6A North and 1A North)

Reports from the States

The Agreement requires that the Contracting Governments provide an annual report to the Review Committee detailing the number of permits or licences issued, volumes authorised, and details of potentiometric surface levels in each zone. The Review Committee has received the annual reports from the States and the relevant information with respect to groundwater allocation and use is contained in Tables 3, 4, and 5.

The States have also provided the Review Committee with a synopsis of resource conditions and cost of managing the groundwater resource in the Designated Area within their respect State reports.

The States have also agreed to review the Agreement and are currently undertaking that process.

4. Funding

In South Australia:

- the Department of Water, Land and Biodiversity Conservation was responsible for the overarching management and planning of the State's water resources and for meeting State priorities and interstate and national obligations. From 1 July 2010, following a Government restructure, this service will be provided by the Department for Water. The state government agencies undertake investigation, monitoring, allocation, licensing and management of water resources; and
- the South Australian Murray-Darling Basin Natural Resources Management Board and the South East Natural Resources Management Board undertake community-based policy, management and water allocation planning.

In Victoria:

- the Department of Sustainability and Environment is responsible for the overarching management and planning of the State's water resources and for meeting State priorities and interstate and national obligations. The Department undertakes investigations, groundwater monitoring and the State Water Inventory;
- the Grampians Wimmera Mallee Water Corporation and the Southern Rural Water Corporation are responsible for licensing groundwater extractions and bore construction. The corporations have direct contact with groundwater users in allocating the resource, managing areas of intense development and resolving complaints.

Table 10 sets out the level of funding for 2009-2010. The figures for Victoria include the Water Corporations' licensing and administration costs. The South Australian costs include licensing and administration costs, but exclude costs incurred by the Natural Resources Management Boards to develop water allocation plans.

Table 10: Funding for 2009-2010

State	Investigations	Monitoring	Resource Management	Agreement Management	Total
Victoria	\$83,400	\$108,700	\$70,800	\$65,600	\$328,500
South Australia	\$83,700	\$184,300	\$399,734	\$115,500	\$783,234
Totals	\$167,100	\$293,000	\$470,534	\$181,100	\$1,111,734

Figure 1: The Designated Area and zones

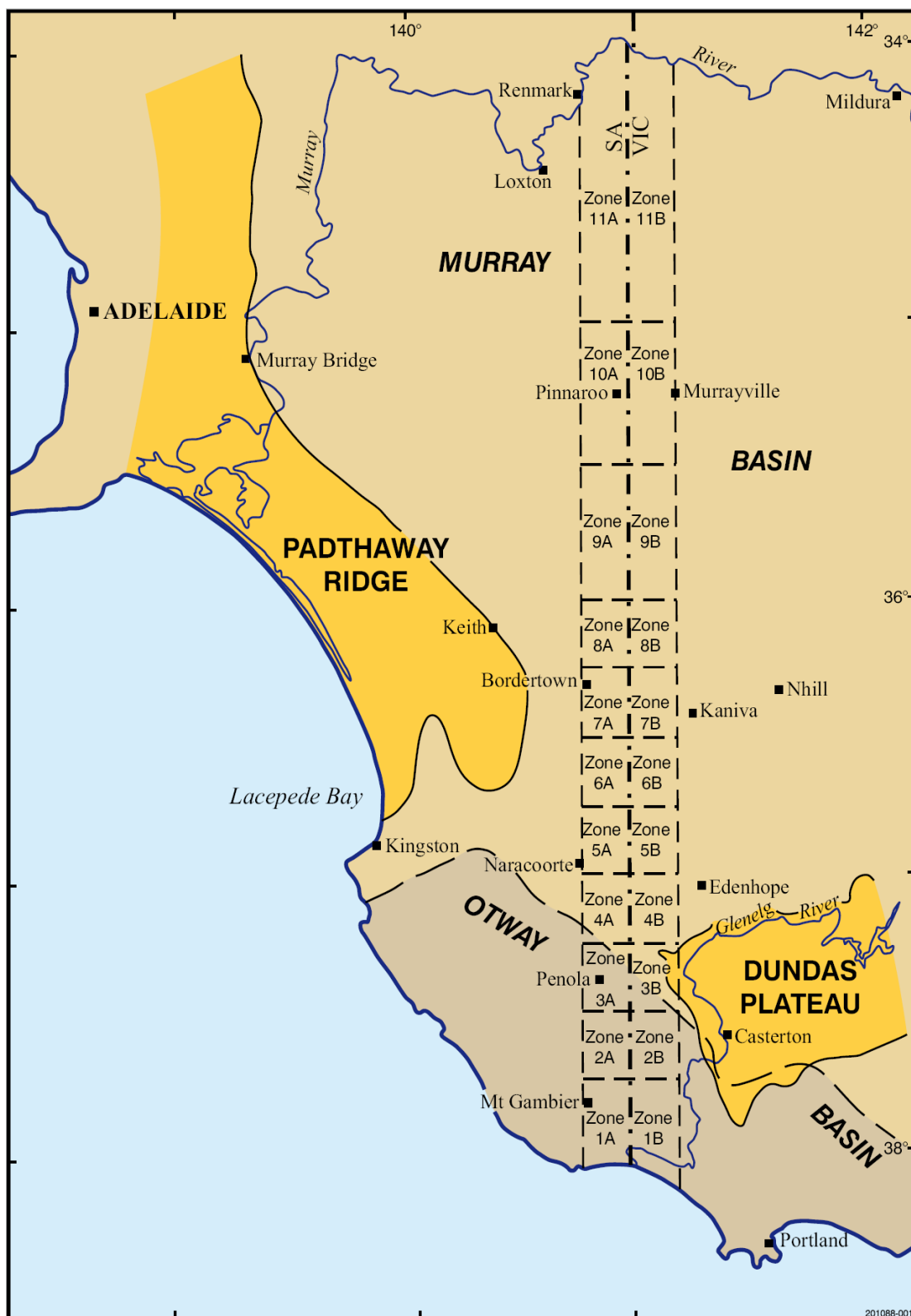


Figure 2: Hydrogeological provinces

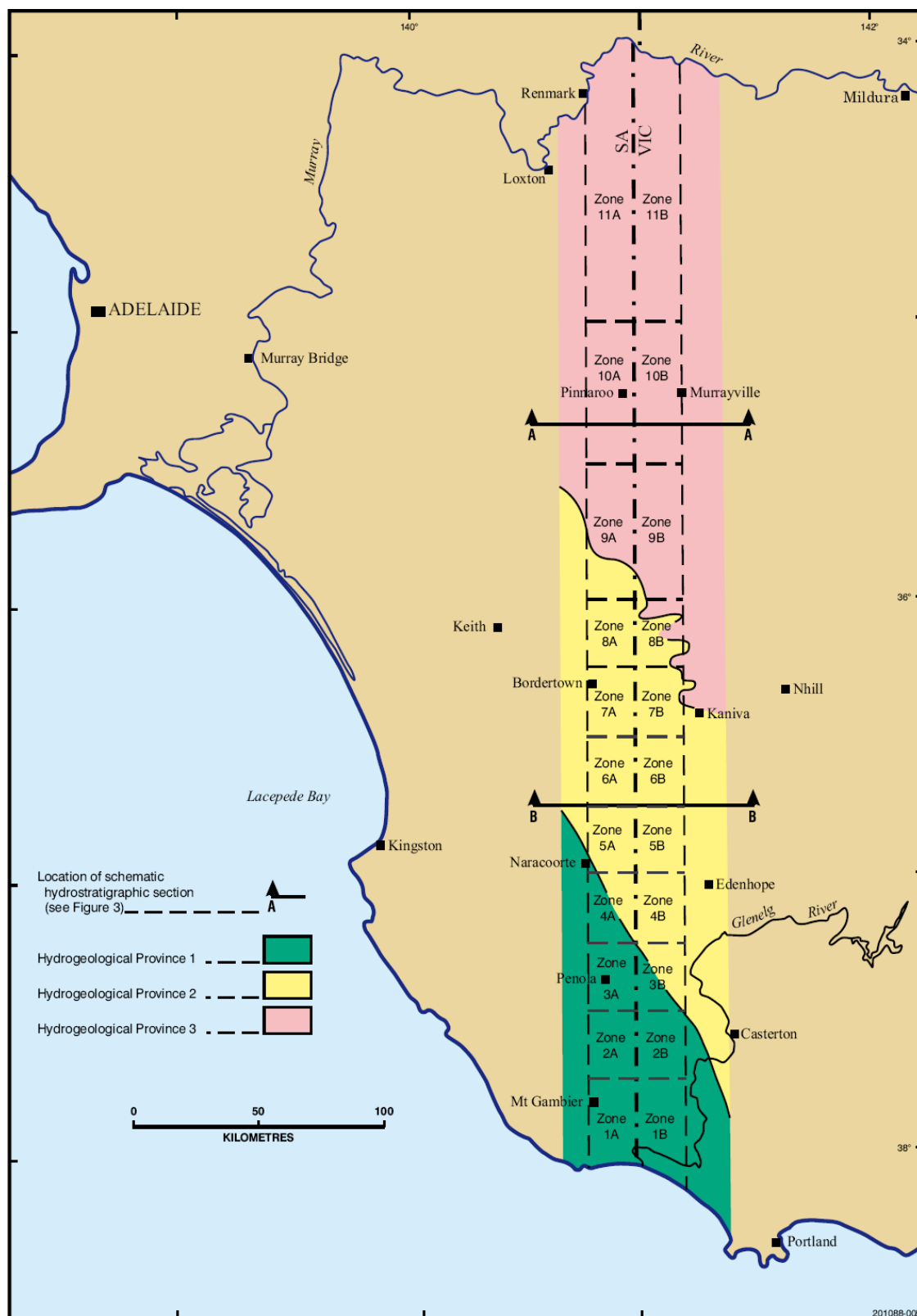


Figure 3: Schematic Hydrostratigraphic cross-sections

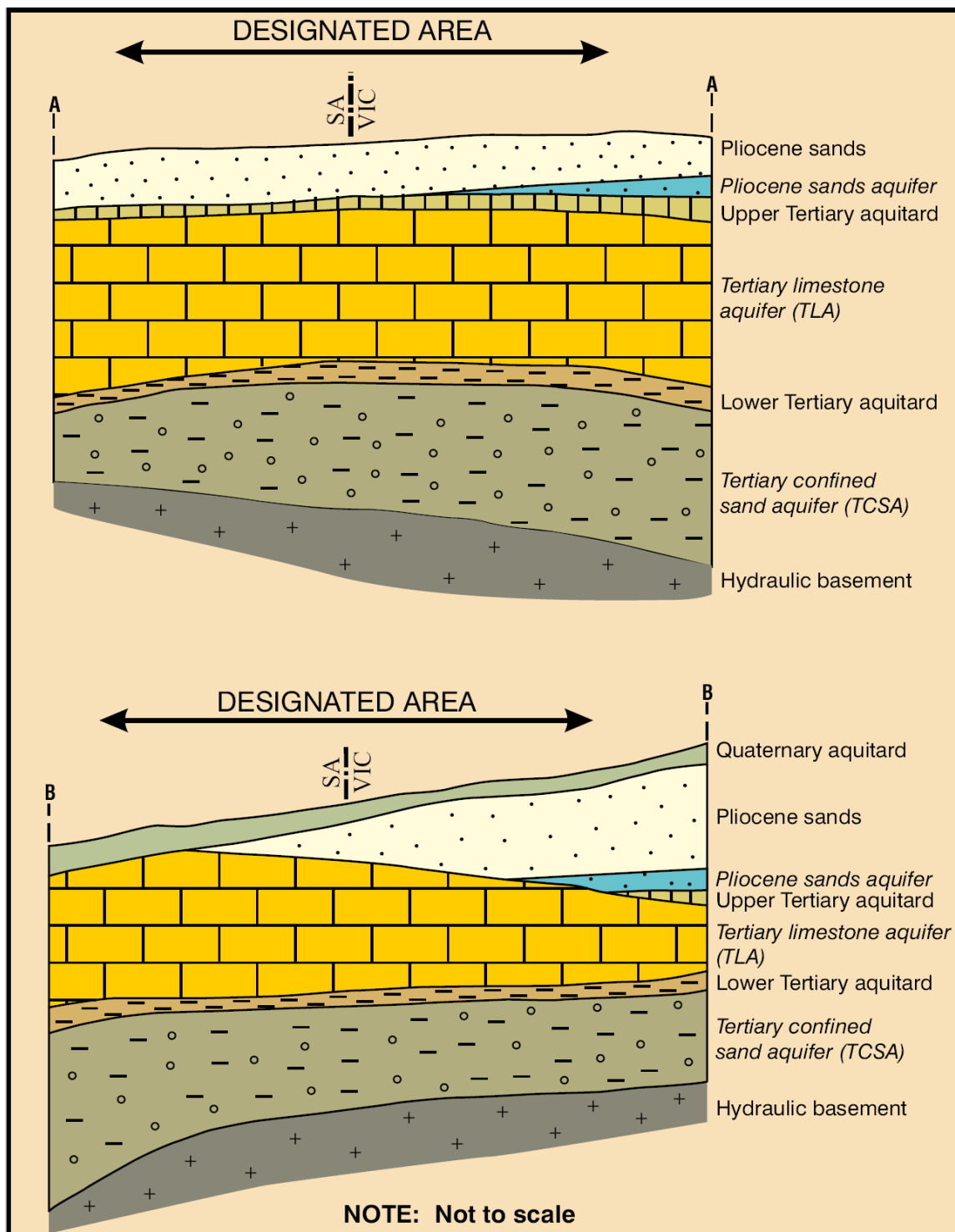


Figure 4: Relationship of management areas in South Australia and Victoria to the Designated Areas

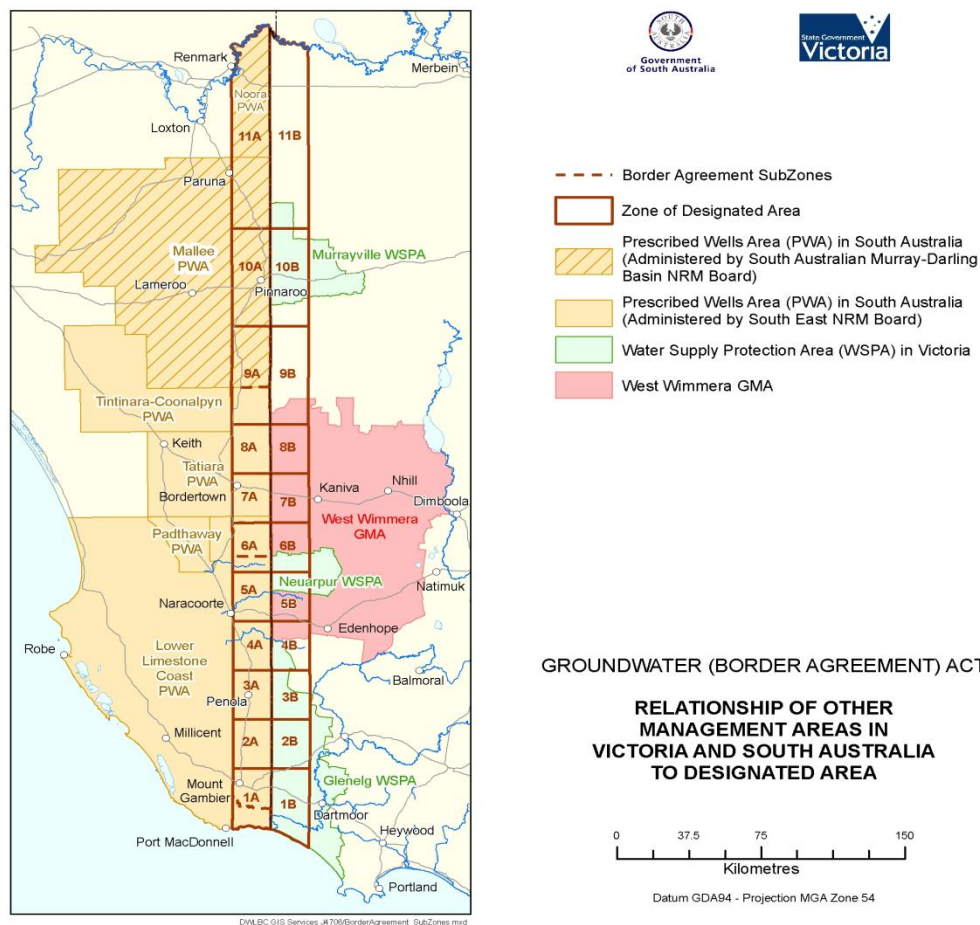


Figure 5: Map of long term groundwater level trends for the Tertiary Limestone Aquifer

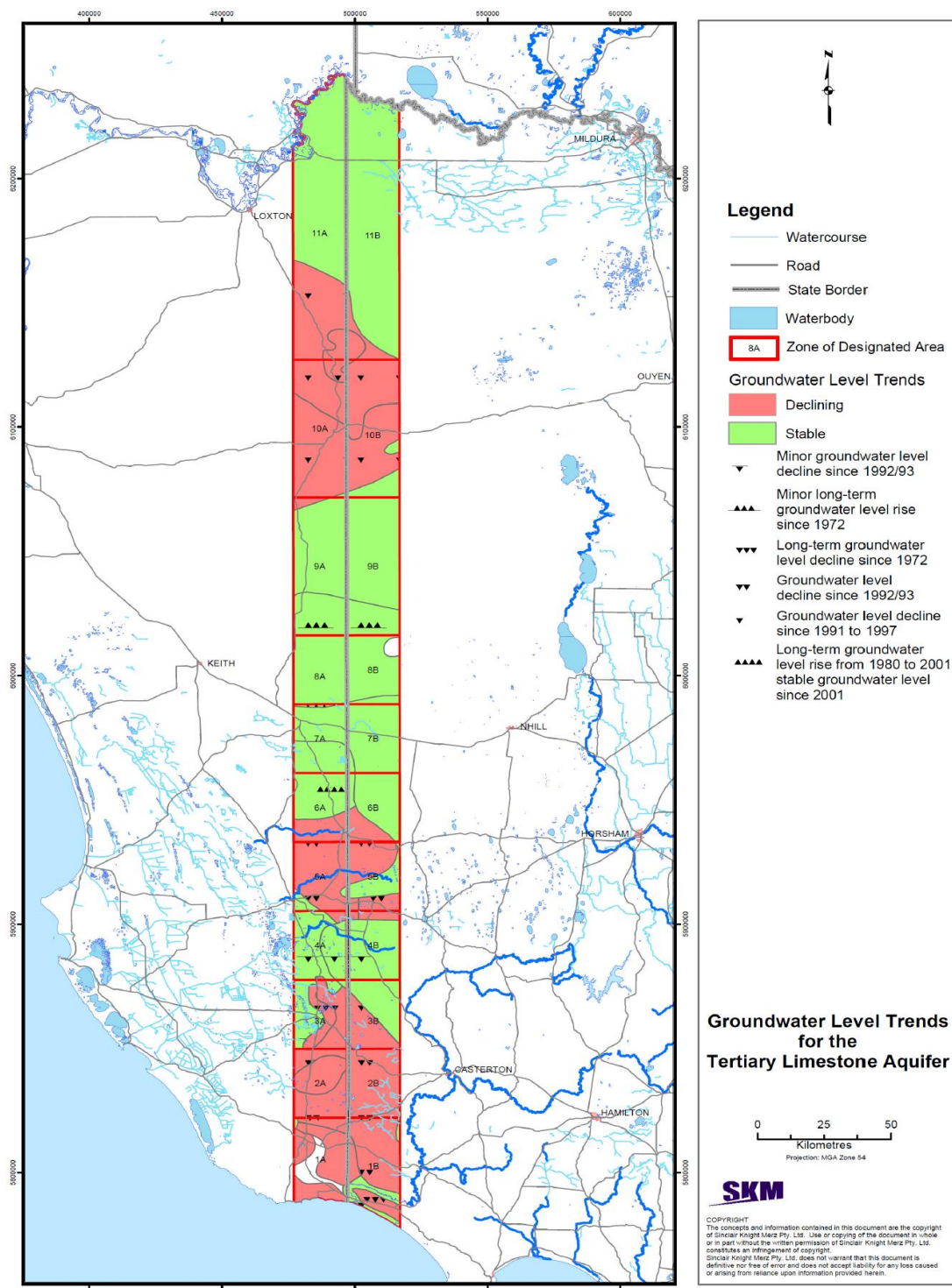


Figure 6: Map of long term groundwater level trends for the Tertiary Confined Sand Aquifer

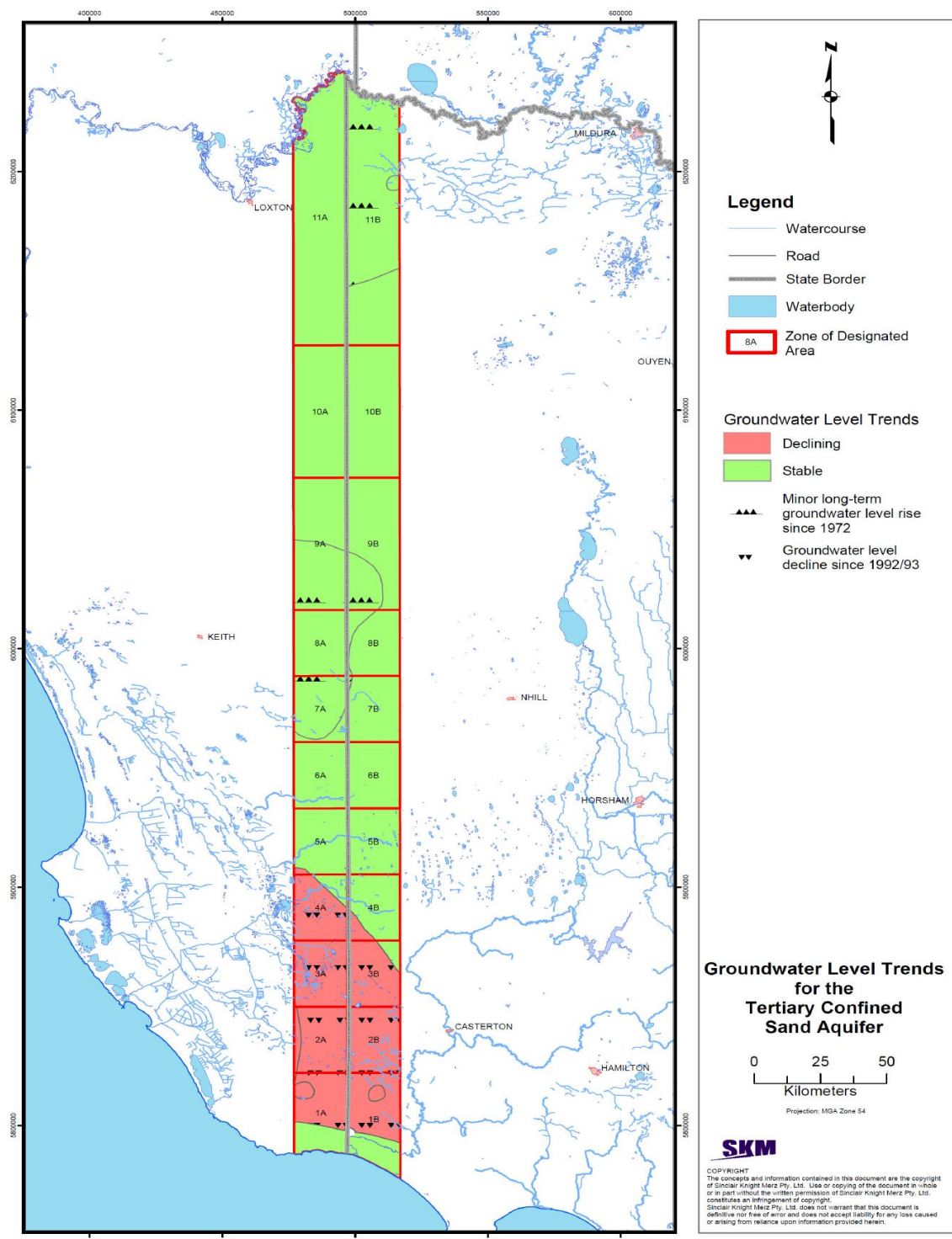
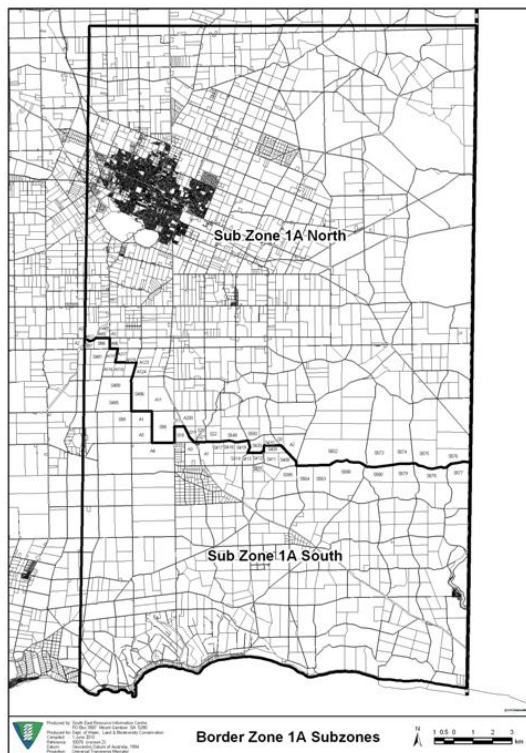


Figure 7: Maps of Sub-division of Zones 1A, 6A and 9A



Boundaries of sub-zones are registered on :

Plan number 35/2010 (Zone 1A)
Plan number 34/2010 (Zone 6A)
Plan number 36/2010 (Zone 9A)

Plans can be viewed at Lands Titles Office at
101 Grenfell Street Adelaide

GLOSSARY

“Aquifer”. Means a geological structure or formation or an artificial landfill permeated or capable of being permeated permanently or intermittently with water.

“Allowable Annual Volume”. Means the allowable volume of extraction specified for a particular sub-zone or aquifer within a sub-zone as has been determined by the Review Committee under clause 28(7) of the Agreement.

“Designated Area”. Means the area comprising part of the State of South Australia and part of the State of Victoria as specified in the First Schedule of the Act. This is an area 40 km wide and centred on the South Australia - Victoria Border and is the area to which the *Groundwater (Border Agreement) Act 1985* applies.

“Permissible Annual Volume”. Means the Permissible Annual Volume of extraction specified for a particular zone or aquifer in a particular zone in the Designated Area.

“Permissible distance”. Means the distance from the border in which all applications for licences must be referred to the Review Committee to determine whether the licence should be issued.

“Permissible potentiometric surface lowering”. Means an average annual rate of potentiometric surface lowering within a zone as prescribed under the Agreement or has been agreed by the Minister for each Contracting Government.

“Permissible salinity”. Means a certain level of salinity within a zone as has been agreed by the Minister for each Contracting Government.

“Prescribed Wells Area”. Means an area declared to be prescribed under the South Australian *Natural Resources Management Act 2004*. Prescription of a water resource requires that future management of the resource be regulated via an approved water allocation plan and extraction of water be licensed.

“Tertiary Limestone Aquifer”. Comprises aquifers in the Murray Group, Heytesbury Group, Coomandook Formation, Bridgewater Formation and Padthaway Formation, called collectively the Tertiary Limestone Aquifer, the base of which is identified as marl or black carbonaceous silt, sand or clay.

“Tertiary Confined Sand Aquifer”. Comprise aquifers in the Wangerrip Group and Renmark Group, below the Tertiary Limestone Aquifer.

“Water Supply Protection Area”. An area declared under the Victorian *Water Act 1989* to protect the area’s groundwater or surface water resources through the development of a management plan, which aims for equitable management and long-term sustainability.

REFERENCES

Border Groundwaters Agreement Review Committee (2001). *Five Year Management Review Report 1996 – 2000*. September 2001.

Border Groundwaters Agreement Review Committee (2007). *Management Review of the Tertiary Limestone Aquifer in Province 2 of the Designated Area*. December 2007.

Border Groundwaters Agreement Review Committee (2008). *Management Review Tertiary Limestone Aquifer and Tertiary Confined Sand Aquifer in Province 1 of the Designated Area*. May 2008.

Border Groundwaters Agreement Review Committee (2010). *Management Review Tertiary Limestone Aquifer in Province 3 of the Designated Area*. January 2010.

Department of Sustainability and Environment (August 2010). *Victoria's Annual Report to 30 June 2010*

Department for Water (August 2010). *Annual Report from the State of South Australia to 30 June 2010*

APPENDICES

Appendix A

29 June 2010

Statement

Amendment to the Permissible Annual Volumes for Tertiary Limestone Aquifer for Zones 7A, 5A, 4A, 3A and 1A

1. The Border Groundwaters Agreement Review Committee (the Committee) acknowledges that the level of allocation from the Tertiary Limestone Aquifer at March 2010 in Zones 1A, 3A, 4A, 5A, 6A and 7A exceeds the Permissible Annual Volumes for these zones (Table 1) as a result of:
 - policy set out in the 2001 Water Allocation Plans for the Naracoorte Ranges and Comaum-Caroline Prescribed Wells Areas (now amalgamated into the Lower Limestone Coast PWA) and the Tatiara Prescribed Wells Area to recognise and licence all bona fide pre-existing water users, together with
 - improved location information for licensed bores (including from which aquifer they extract water).
2. The Committee also acknowledges that South Australia has not issued any new licences from the Tertiary Limestone Aquifer in Zones 1A, 3A, 4A, 5A, 6A and 7A since 2001, with the exception of bona-fide pre-existing users in existence at the time of adoption of the 2001 Plans.

Table 1

Zone	Tertiary Limestone Aquifer	
	Permissible Annual Volume (ML/yr)	Volume Allocated at March 2010 (ML/yr)
7A	7,500*	8,259
5A	18,500	18,943
4A	20,000	22,102
3A	24,000	24,054
1A	31,090	31,812

* Permissible Annual Volume for Zone 7A at 1 July 2012 (gazetted on 15 October 2009)

3. The Committee notes that the revised Water Allocation Plan for the Tatiara Prescribed Wells Area was recently adopted by the responsible South Australian Minister (7 June 2010), while a revised Lower Limestone Coast Water Allocation Plan has been prepared. The Committee notes that both Plans preclude the issue of any new licences from the Tertiary Limestone Aquifer and that a key goal of the Plans is to reduce allocations to an environmentally

sustainable level of extraction, through staged reductions and regular monitoring of trends in depth to the water table and groundwater salinity.

4. In the case of Zone 7A, the Committee has expressed concern that increasing the Permissible Annual Volumes may imply inconsistency with its previous determination that there should be no further allocation of groundwater in Province 2. However the Committee is satisfied that the amendments sought are justified as they reflect the historical entitlements and are not for additional allocation of groundwater.
5. The Committee agrees to amend the Permissible Annual Volumes from the Tertiary Limestone Aquifer for Zones 1A, 3A, 4A, 5A and 7A and advises that the purpose of the amendment is to accurately reflect the licensed volumes for these zones.
6. The Permissible Annual Volumes will be amended as follows –
 - a) Zone 7A of the Tertiary Limestone Aquifer shall become:
 - i. 8,803Megalitres on 1 July 2011; and
 - ii. 8,259 Megalitres on 1 July 2012;
 - b) Zone 5A of the Tertiary Limestone Aquifer shall be 18,943 Megalitres;
 - c) Zone 4A of the Tertiary Limestone Aquifer shall be 22,102 Megalitres;
 - d) Zone 3A of the Tertiary Limestone Aquifer shall be 24,054 Megalitres; and
 - e) Zone 1A of the Tertiary Limestone Aquifer shall be 31,812 Megalitres.

N Power
President
Border Groundwaters Agreement Review Committee
29 June 2010

Appendix B

15 April 2010

Statement

**Amendment to the Permissible Annual Volumes for Tertiary Limestone Aquifer
for Zones 5B and 6B**

1. The Committee acknowledges that as part of the development of the West Wimmera Groundwater Strategy, Grampians Wimmera Mallee Water (GWMWater) has improved the accuracy of licence information.
2. GWMWater has identified that in improving the location information for a number of licensed bores, that the licensed volumes from the Tertiary Limestone Aquifer in Zones 5B and 6B are higher than previously reported. Accurately locating these licensed extractions means that the Permissible Annual Volumes for the zones are being exceeded (Table 1). The Agreement requires that no licences may be renewed while the Permissible Annual Volumes are exceeded. Victoria is therefore seeking the Committee's support to amend the Permissible Annual Volumes in Zones 5B and 6B.

Zone	Tertiary Limestone Aquifer	
	Permissible Annual Volume (ML/yr)	Volume Allocated (ML) (according to improved data)
5B	11,949	12,201
6B	9,838	10,811

Table 1

3. The Committee acknowledges that GWMWater has not issued any new licences in Zones 5B and 6B since 2000. The revised licensed volumes in Zones 5B and 6B do not change the total licence entitlement in the Neuarpur Water Supply Protection Area. The Neuarpur Water Supply Protection Area includes the northern part of Zone 5B and the southern part of Zone 6B and an area east of the Designated Area.
4. In December 2007 the Committee completed a review of the groundwater resources in Province 2 (of which Zones 5B and 6B are part). This resulted in a revised management approach on the basis that the groundwater is considered as a non-renewable resource. The Committee recommended that the two States develop a common policy for the use of the non-renewable resource in Province 2 and in the meantime, there should be no further allocation of groundwater in Province 2.
5. While this is an accounting matter, the Committee notes that the West Wimmera Groundwater Management Strategy is being developed on the basis that the resource is non-renewable. A key goal of the strategy is to manage use in Zones 5B and 6B to acceptable levels. Long-term groundwater level declines in the parts of Zones 5B and 6B covered by the Neuarpur Water Supply Protection Area are due to groundwater extraction.
6. The Committee has expressed concern that increasing the Permissible Annual Volumes may imply inconsistency with its previous determination that there should be no further allocation of groundwater in Province 2. However the Committee is satisfied that the amendments

sought are justified as they reflect bona fide historical entitlements and are not for additional allocation of groundwater.

7. The Committee agrees to amend the Permissible Annual Volumes for Zones 5B and 6B and advises that the purpose of the amendment is to accurately reflect the current licensed volumes for these zones and to allow for the renewal of licences. The amendment to the Permissible Annual Volumes will not increase groundwater use. A key goal of the West Wimmera Groundwater Strategy is to manage use to acceptable levels.
8. The Permissible Annual Volume will be amended as follows –
 - (a) Zone 5B of the Tertiary Limestone Aquifer shall be 12,201 Megalitres; and
 - (b) Zone 6B of the Tertiary Limestone Aquifer shall be 10,811 Megalitres.

N Power
President
Border Groundwaters Agreement Review Committee
15 April 2010

BORDER GROUNDWATERS AGREEMENT REVIEW COMMITTEE

10 September 2009

Statement

Amendment to the Permissible Annual Volumes for Tertiary Limestone Aquifer for Zones 7A, 8A and 9A, and the Allowable Annual Volume for Sub-zone 9A South

1. The Committee acknowledges that South Australia is undertaking a program to convert groundwater licences from being based on the area of irrigation (area-limited) to being based on a volumetric entitlement (volume limited) and supports the program.
2. The Committee notes that the conversion program is being applied across all of South Australia and is being implemented in stages by amending the water allocation plans that are established under the provisions of the South Australian *Natural Resources Management Act (2004)*. The plans specify the arrangements for the conversion of the licences. The draft water allocation plan for the Tatiara Prescribed Wells Area is the first of three plans in preparation that cover areas adjacent to the State border and covers a portion of Province 2 of the Designated Area in Zone 8A and parts of Zones 7A and 9A.
3. In December 2007 the Committee completed a review of the groundwater resources in the Province 2. This resulted in a revised management approach on the basis that the groundwater is now considered as a non-renewable resource. Two important aspects of the revised approach were: 1) the setting of Permissible Annual Volumes at current level of commitment; and 2) a recommendation that the two States develop a common policy for the use of the non-renewable resource in Province 2. The future use of the groundwater resources in Province 2 will be determined by this joint action.
4. The Committee notes that there is a potential for the conversion process under the draft Tatiara Water Allocation Plan to lead to non-compliance with the Border Groundwaters Agreement within the Designated Area. The total volume of allocations following the conversion for each zone may be greater than the Permissible Annual Volumes as now determined. South Australia has sought the Committee's support to vary the Permissible Annual Volumes/Allowable Annual Volume in Zones 7A, 8A and 9A and Sub-zone 9A South to those proposed in the conversion process. This involves raising the Permissible Annual Volumes and then stepping them down over three years until they reach the level as follows:

Zone	Permissible Annual Volume (Megalitres) Tertiary Limestone Aquifer			
	At the date of gazettal	1 July 2010	1 July 2011	1 July 2012
9A	12,641	12,293	11,944	11,595
8A	6,309	5,824	5,339	4,854
7A	10,270	9,346	8,423	7,500

Sub-zone	Allowable Annual Volume (Megalitres) Tertiary Limestone Aquifer			
	At the date of gazettal	1 July 2010	1 July 2011	1 July 2012
Sub-zone 9A South	8,806	8,458	8,109	7,760

5. The Committee advises that the purpose of the amendment to the Permissible Annual Volumes/Allowable Annual Volumes is to allow for the conversion of licences from area-based entitlement to volumetric-based entitlement and not to facilitate increased irrigation development.
6. The Permissible Annual Volumes and Allowable Annual Volumes are stepped down over time for the purpose of providing licence holders whose entitlement will be reduced to adjust over time rather than instantaneously.

R Nott
President
Border Groundwaters Agreement Review Committee

Appendix D

29 June 2010

Statement

Amendment to the Permissible Annual Volumes for Tertiary Limestone Aquifer for Zones 10A and 11A and set an Allowable Annual Volume for Sub-zone 9A North

1. The Border Groundwaters Agreement Review Committee (Committee) acknowledges and supports the program that South Australia is undertaking to convert water licences for irrigation from groundwater from being area based on the area of irrigation (area-limited) to being based on volumetric entitlement (volume limited).
2. The Committee notes that the conversion program is being applied across all South Australia and is being implemented through water allocation plans that are being established under the provisions of the South Australian *Natural Resources Management Act (2004)*. The plans are able to specify the arrangements for the conversion of the licences. The draft water allocation plans for the Mallee Prescribed Wells Areas is one of three plans that covers areas adjacent to the State border and covers a portion of Province 3 of the Designated Area, Zone 10A and 11A and in Sub-zone 9A North.
3. In 2001 the Committee established Permissible Annual Volumes for the Tertiary Limestone Aquifer at a level to meet the estimated area based water allocations. In 2007, while the actual values have remained the same, the maximum allocation limit was redefined as the Permissible Annual Volume; the volumes are as follows:

Zone	Permissible Volume megalitres
11A	6861
10A	9400
9A	11595

4. In response to a South Australian request to divide Zone 9A into two Sub-zones (Sub-zone 9A South and Sub-zone 9A North) to facilitate regional management of the Tatiara Prescribed Wells Area and the Mallee Prescribed Wells Area by two separate Natural Resources Management Boards, the Committee resolved to establish Allowable Annual Volumes for the 9A Sub –zones at Meeting 92 on 5 December 2007 as summarised below:

Sub-zone	Permissible Volume megalitres
9A North	3 835
9A South	7 760
Revised total for Zone 9A	11 595

5. The Committee notes that there is a potential for the volumetric conversion process under the Mallee Prescribed Wells Area draft water allocation plan to lead to non-compliance with the Border Groundwaters Agreement within the Designated Area. The total volume of allocations following the conversion volumetric allocations in each zone may be greater than the Permissible Annual Volume as now determined. South Australia has sought the Committee's support to vary the Permissible Annual Volumes/Allowable Annual Volume in Zones 11A, 10A and Sub-zone 9A North to those proposed by the South Australian Murray Darling Natural Resources Management Board.
6. The Committee notes that the South Australian Murray Darling Natural Resources Management Board proposes to divide Zones 10A and 11A into smaller water management areas to institute a transfer policy regime. Adoption of the transfer policy will ensure that irrigation activity cannot be further increased or concentrated above current commitments in areas where increased or concentrated extractions could pose a threat to the groundwater resource, with a lowering of the potentiometric surface. These new water management areas and the accompanying proposed policies are intended to be embodied in the water allocation plan, which when adopted by the responsible Minister, becomes a statutory document.
7. The South Australian Murray Darling Basin Natural Resources Management Board advises that the Permissible Annual Volumes and Allowable Annual Volume being sought will require a reduction to a number of 'sleeper' allocations, but will enable existing groundwater users to continue to utilise existing irrigation systems within volumetric allocations. The re-assignment of the Permissible Annual Volumes and Allowable Annual Volume with the introduction of volumetric allocations and the new transfer strategy will help minimise the risks of a permanent groundwater level draw down 'hot spot' developing in the Peebinga area.
8. The Committee has been advised by the South Australian Murray Darling Natural Resources Management Board that these proposed policies require a redistribution of Permissible Annual Volumes/Allowable Annual Volume in Zones 11A, 10A and Sub-zone 9A North. The redistribution of Permissible Annual Volumes/Allowable Annual Volume does not result in a material change to the current aggregate volume for the Zones 11A, 10A and Sub-zone 9A North.
9. The Committee has resolved to adjust the Permissible Annual Volumes and Allowable Annual Volume for the Tertiary Limestone Aquifer in Zones 11A, 10A and Sub-zone 9A North as follows:

Zone	Current PAV/AAV ML	Proposed PAV/AAV ML
Zone 11A	6 861	3 700
Zone 10A	9 400	14 000
Sub Zone 9A North	3 835	2 400
Total	2 0096	20 100

10. The Committee notes that the purpose of the amendment to the Permissible Annual Volumes/Allowable Annual Volume is to allow for the conversion of licenses from area based entitlement to volumetric-based entitlement and to encourage a wider distribution of water use by facilitating the reduction in the areas of concentrated irrigation development.
11. The Committee's management review for Province 3 concluded that there are no discernible salinity trends in Province 3 and there is no perceived risk of salinisation of the Tertiary Limestone Aquifer in the short to medium term.

N Power
President
Border Groundwaters Agreement Review Committee
29 June 2010

Appendix E

Summary of notices appearing in State Government Gazettes for the management year ending 30 June 2010

South Australia

Date of notice	Publish date of Gazette	Summary of issue
8 October 2009	15 October 2009	Alteration of permissible distance; Zones 1A to 11A
8 October 2009	15 October 2009	Alteration of Permissible Annual Volume; Zone 7A to 9A
8 October 2009	15 October 2009	Alteration of Permissible Annual Volume; Zone 6A
29 June 2009	1 July 2010	Sub-zoning of Zone 1A and Allowable Annual Volume for Sub-zone 1A South
29 June 2009	1 July 2010	Sub-zoning of Zone 6A and Allowable Annual Volume Sub-zone 6A South. Alteration of Permissible Rate of Potentiometric Surface Lowering for Sub-zones 6A South and 6A North
29 June 2009	1 July 2010	Sub-zoning of Zone 9A and Allowable Annual Volume Sub-zone 9A South and Sub-zones 9A North
29 June 2009	1 July 2010	Alteration of Permissible Rate of Potentiometric Surface Lowering, Zone 5A
29 June 2009	1 July 2010	Alteration of Allowable Annual Volume; Zone 1A
29 June 2009	1 July 2010	Alteration of Allowable Annual Volume; Zone 3A
29 June 2009	1 July 2010	Alteration of Allowable Annual Volume; Zone 4A
29 June 2009	1 July 2010	Alteration of Allowable Annual Volume; Zone 5A
29 June 2009	1 July 2010	Alteration of Allowable Annual Volume; Zone 7A
29 June 2009	1 July 2010	Alteration of Allowable Annual Volume; Zone 10A
29 June 2009	1 July 2010	Alteration of Allowable Annual Volume; Zone 11A

Victoria

Date of notice	Publish date of Gazette	Summary of issue
8 October 2009	15 October 2009	Alteration of Permissible Annual Volume; Zone 7B and 8B
8 October 2009	15 October 2009	Alteration of Permissible Distance; Zones 1B to 11B
15 April 2010	15 July 2010	Alteration of Permissible Annual Volume; Zones 5B and 6B
29 June 2010	15 July 2010	Alteration of Permissible Rate of Potentiometric Surface Lowering Zones 5B and 6B