South Australian – Victorian Border Groundwaters Agreement Review Committee

Government of South Australia

State Government Victoria

Twenty Third Annual Report

To June 2008

Melbourne and Adelaide

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1. The year in summary

The continuation of long term declines in groundwater levels in a number of locations in the border Designated Area in the past twelve months has led the Review Committee to concentrate efforts to complete its review of the groundwater resources in the region.

Groundwater resource condition, Province 1

In June 2008 the Review Committee completed its review of the groundwater resources in Province 1 (BGARC 2008) and submitted it to the Contracting Governments.

The major issue is the presence of widespread declines in groundwater levels in this province. The current mix of land use and groundwater extractions is clearly out of balance and is not sustainable in the longer term.

A new management approach is needed to achieve long term sustainability. The Review Committee proposed a management strategy in its review as consequence of the continuing decline of groundwater levels. As part of the strategy the Review Committee has made a number of recommendations.

The Review Committee recommended that States develop a consistent approach on accounting for the water utilised by plantation forestry. To progress this issue the Review Committee facilitated a joint meeting of South Australian and Victorian agencies in Melbourne to exchange information on the policy options being developed in each State.

The Review Committee resolved to sub-zone Zone 1A, as provided for with the recently amended Agreement, to aid in managing the risk of seawater intrusion. The Committee also recommends an assessment of the potential impacts of declining groundwater levels on groundwater bores in the Lake Mundi area and develop a management plan to address any adverse impacts arising from the water level decline.

Groundwater resource condition, Province 2

In December 2007 the Review Committee completed its review of the groundwater resources in Province 2 (BGARC 2007).

The review confirms that this resource is not being replenished by modern recharge and should be considered as a non-renewable resource. Previously it was assumed that the aquifers received annual recharge and the management prescriptions were set accordingly.

This revised understanding of the Tertiary Limestone Aquifer is evidenced by the observed declines in groundwater levels of approximately two metres over ten years in the area of concentrated extractions around Neuarpur in Victoria and Frances in South Australia.

The Review Committee submitted its review to the States advising them of the need to develop a policy for the management and use of the resource on the basis that it is non renewable. In the immediate term this decline in groundwater appears to be manageable with respect to the capacity of the resource whilst a policy is prepared.

As part of the strategy the Review Committee has resolved to sub-zone Zone 6A.

Groundwater resource condition, Province 3

Groundwater level drawdowns in the summer of 2007/08 were double compared to drawdowns in previous years in parts of Province 3 of the Designated Area.

The drawdowns over 2007/08 are of concern due to the potential for loss of water supply to other groundwater users, particularly stock and domestic users.

The Review Committee sought reports from the States from which to ascertain what further action may be warranted.

2. About the Agreement and the Review Committee

The Border Groundwaters Agreement

Along the Victorian-South Australian border, groundwater is the only reliable water source and there is increasing demand for the use of this resource.

The resource is shared between both States and 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 2005.

The Agreement establishes a Designated Area, extending 20 kilometres either side of the border, extending 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. In any of the 22 zones, the prescriptions limit water use to that specified as the Permissible Annual Volume for total withdrawals from all aquifers, or to an average annual rate of lowering of potentiometric (water) levels as specified or 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 actual 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 the making and implementation of the arrangements.

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

Table 1 Management areas relevant to the Designated Area

South Australia (Prescribed Wells Areas)	Victoria (Water Supply Protection Areas)
Lower Limestone Coast Tatiara Mallee Noora	Apsley Glenelg Kaniva Murrayville Neuarpur Telopea Downs

Border Groundwaters Agreement Review Committee

The Border Groundwaters Agreement Review Committee (the Review Committee) with membership from both States, is established under the Agreement as the operating body for the effective implementation of the Border Groundwaters 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, the permissible distance, the permissible rate of potentiometric surface lowering (drawdown); and the permissible levels 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, the Permissible Annual Volume, Allowable Annual Volume, or declare a period of restriction. The relevant State Ministers have the power to alter the permissible rate of potentiometric surface lowering or the permissible 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 six times during the year:

9 August 2007	Adelaide
10 October 2007	Melbourne
5 December 2007	Adelaide
6 February 2008	Melbourne
9 April 2008	Adelaide
11 June 2008	Melbourne

During the year membership of the Review Committee comprised:

South Australia		**Victoria**	
Mr N Power	member	Mr R Nott	member
Ms B Cohen	member	Dr J Cooke	member
Mr S Mustafa	deputy member	Mr M Burns	deputy member

Mr N Power was President until January 2008. Mr R Nott was President from February 2008. Ms L Schuyler was secretary until January 2007. Ms E Nelson was secretary from February 2008.

3. General Information

Groundwater resources in the South Australia – Victoria border area

Along the Victorian/South Australian border, groundwater is the only reliable water source. There are two main aquifer systems comprising the Tertiary Confined Sand Aquifer[1] and the overlying Tertiary Limestone Aquifer[2] (Figure 3).

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, industrial and widespread irrigation use.

Groundwater salinity 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 Gambier Limestone forming one unconfined aquifer system;
>
> Province 2 is located in the Murray Basin where the 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 Murray Group Limestone is confined by the Upper Tertiary Aquitard.

Permissible Annual Volumes, Allowable Annual Volumes, allocations and use

Following the review of the groundwater resources in Province 1 and 2 (BGARC 2008, BGARC 2007) the Review Committee has determined that the current Permissible Annual Volumes for the Tertiary Limestone Aquifer and Tertiary Confined Sand Aquifer be maintained over the next management review period. The Committee determined a Permissible Annual Volume in relation to the Pliocene Sands Aquifer for Zone 11A to be 2,144 Megalitres to enable extractions from the Murtho Salt Interception Scheme. The declaration was gazetted in the South Australian Government Gazette on 22 May 2008. Table 2 sets out the Permissible Annual Volumes for each zone and the Permissible Annual Volumes for each aquifer of each zone at 30 June 2008. The Permissible Annual Volume for the Pliocene Sands Aquifer is included in Table 2.

[1] The Tertiary Confined Sand Aquifer is the Dilwyn Formation in the Otway Basin and the Renmark Group in the Murray Basin.
[2] The Tertiary Limestone Aquifer is generally the Gambier Limestone in the Otway Basin and the Murray Group Limestone in the Murray Basin.

Tables 3 and 4 list the allocations and use for the Tertiary Limestone Aquifer and the Tertiary Confined Sand Aquifer respectively. Note that the 'volume used' is licensed use and does not take account of domestic and stock use or the impacts of plantation forests. No new commitments of water were made during the year. Licences have been issued to a major industrial proponent to take water from the Tertiary Confined Sand Aquifer in Zone 2A and a public water supply in Zone 3A under previously made commitments consistent with the prevailing Lower Limestone Coast Allocation Plan.

The zones for the Tertiary Limestone Aquifer along the Designated Area within South Australia are fully allocated except Zone 2A where the total volume allocated is within the volume specified for allocation in the Lower Limestone Coast Water Allocation Plan. The volume difference between the Permissible Annual Volume and the allocation available in the water allocation plan is held in a Minister's reserve. The Review Committee in its management review for Province 1 requested that South Australia not allocate this volume due to the continuing decline in groundwater levels in the Tertiary Limestone Aquifer.

An immediate issue of the Review Committee's review of Province 1 (BGARC 2008) is the potential for seawater intrusion into fresh coastal aquifers in the South Australia coast region. In this region the seawater–fresh water interface in the Tertiary Limestone Aquifer has been observed one kilometre inshore from the coast and 150 metres below ground. There are irrigation supplies being extracted in this area and there are groundwater dependent ecosystems such as Piccaninnie Ponds and other wetlands, which would be put in jeopardy by the intrusion of seawater.

To prevent deterioration of the current situation and manage the risk of seawater intrusion the Review Committee has resolved to sub-zone Zone 1A. The sub-zone boundary will align with the existing boundary between management zones Glenburnie and Donovans within the Lower Limestone Coast Prescribed Wells Area and an Allowable Annual Volume for the sub-zone will be set at the level of the current entitlement. This will permit the transfer of water licences from the sub-zone to the northern part of Zone 1A and not vice versa.

It is acknowledged in the review of groundwater resources in Province 1 (BGARC 2008) that the groundwater levels are declining in the Tertiary Confined Sand Aquifer despite the entitlements being well below the Permissible Annual Volumes. Further information is needed to establish the causes of these declines. The Review Committee has recommended that the governments maintain the moratorium on the issuing of additional water entitlements from the Tertiary Confined Sand Aquifer, pending the satisfactory resolution of the reasons for the declining levels within the Tertiary Confined Sand Aquifer.

The Review Committee notes the South Australian report to the Review Committee that South Australia has instituted a program to convert crop area based water allocations to volumetric allocations in both the South East and the Mallee.

The Agreement does not apply to bores for domestic and stock purposes. The estimated number of stock and domestic bores for each zone is listed in Table 5. The list provides an indication of the important role groundwater plays for domestic and stock purposes.

Table 2 Permissible Annual Volumes at 30 June 2008

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	6861	0	11A	11B	1823	0
	9400	320	10A	10B	6720	560
	11595	570	9A	9B	5960	630
	7700	340	8A	8B	6760	330
	7500	350	7A	7B	6600	350
	8850	360	6A	6B	9838	360
	18500	540	5A	5B	11949	570
	20000	710	4A	4B	14000	300
	24000	1900	3A	3B	16500	1000
	25000	2900	2A	2B	25000	5100
	30900	9200	1A	1B	45720	14500

Table 3 Permissible Annual Volumes, allocations and metered use for Tertiary Limestone Aquifer at 30 June 2008

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 Used[1] (ML)				No. of Licences	Volume Allocated (ML)	Volume Used (ML)
6861	17	6627	3575	11A	11B	1823	3	1600	1064
9400	43	9251	12172	10A	10B	6720	23	6358	4904
11595	13	10230	3812	9A	9B	5960	3	5000	630
7700	42	4854	1080	8A	8B	6760	7	2538	857
7500	110	8254	6952	7A	7B	6600	15	5692	637
8850	63	8758	5442	6A	6B	9838	14	9838	6164
18500	144	18999	12875	5A	5B	11949	36	11949	8689
20000	192	22064	14059	4A	4B	14000	6	2339	455
24000	272	24049	17217	3A	3B	16500	6	515	56
25000	136	19976	10499	2A	2B	25000	41	24586	4737
30900	375	31866	23081	1A	1B	45720	19	4780	2958

Note 1: Zones 10A and 11A are metered use and Zones 1A, 2A, 4A, 5A, 6A, 7A, 8A and 9A are estimated use. Zone 3A is combination of metered and estimated use.

Table 4 Permissible Annual Volumes, allocations and metered use for Tertiary Confined Sand Aquifer at 30 June 2008

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 Used (ML)				No. of Licences	Volume Allocated (ML)	Volume Used (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	N/A	4A	4B	300	0	0	0
1900	2	1030	0	3A	3B	1000	0	0	0
2900	3	1455	N/A	2A	2B	5100	0	0	0
9200	4	1711	N/A	1A	1B	14500	0	0	0

Table 5 Number of stock and domestic bores

South Australia		Victoria	
Number of Stock and Domestic Bores	Zone	Zone	Number of Stock and Domestic Bores
18	11A	11B	17
28	10A	10B	243
9	9A	9B	47
12	8A	8B	113
74	7A	7B	104
80	6A	6B	56
233	5A	5B	162
253	4A	4B	339
244	3A	3B	79
228	2A	2B	577
545	1A	1B	625

NOTE: The numbers of stock and domestic bores are best estimates as 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.

In 2006 the Review Committee determined that the permissible distance should be varied to provide a separate permissible distance for each zone for the Tertiary Limestone Aquifer and the Tertiary Confined Sand Aquifer. The new distances are yet to be gazetted. The current permissible distances are specified in Table 6.

There were no applications for the Review Committee to consider during the year.

Table 6 Permissible distance at 30 June 2008

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 prescribed permissible potentiometric surface lowering rates for each of the zones is shown in Table 7.

Following the Review Committee's review of groundwater resources in Province 2 (BGARC 2007) the Review Committee recommended to the Ministers that they alter the rate of permissible potentiometric surface lowering for a number of the zones as detailed below:

- alter the rate of permissible potentiometric surface lowering for the Tertiary Limestone Aquifer for Zones 5A, 5B and 6B to 0.2 metres per annum; and
- replace the rate of permissible potentiometric surface lowering for the Tertiary Limestone Aquifer for Zone 6A with the rates for Sub-zone 6A South at 0.2 metres per annum and Sub-zone 6A North at 0.05 metres per annum.

The alterations for Zones 6A and 6B would enable existing licensed groundwater extraction and farming operations to continue. The alterations for Zones 5A and 5B better reflect the

observed declines in groundwater levels in the region. The changes would not affect licence holders.

The review of Province 1 identified that the observed water level trends are within the permissible potentiometric surface lowering rates. The Review Committee determined that the current rates of potentiometric surface lowering be maintained over the next management review period.

Table 7 Permissible potentiometric surface lowering rates at 30 June 2008

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	6B	0.05
0.25	5A	5B	0.25
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

No permissible rate for groundwater salinity rise has been set to date, and following the reviews of Province 1 and Province 2 (BGARC 2008, BGARC 2007) the Review Committee has determined that currently there appears to be no need to set such a rate.

Reports from the States

The Agreement requires that each Contracting Government shall in relation to the zones within its respective jurisdiction cause to be prepared a report including the number of permits, authorised volumes and details of the potentiometric surface levels. The States' information on permits, bores and allocation are contained in Tables 3 and 4. In respect to groundwater levels, Figures 3 and 4 show the location of groundwater trends across the Designated Area for the Tertiary Limestone Aquifer and the Tertiary Confined Sand respectively. Areas with long term declining trends in Province 1 and Province 2 continue to show declining trends over 2007/08. In Province 3 groundwater levels declined from 1995 to 2002 and a cone of depression has formed centred at Peebinga South Australia, an area of concentrated irrigation development. In the period from 2002 to 2008 the rate of decline

diminished considerably. In one part of Province 3 the groundwater level drawdowns in summer of 2007/08 were double compared to drawdowns in previous years.

South Australia advises in its report that the South Australian Murray-Darling Basin Natural Resources Management Board is currently reviewing the Mallee Water Allocation Plan and the South East Natural Resources Management Board is reviewing the Tatiara and Lower Limestone Coast Water Allocation Plans. Preparation of these plans has been extended and is now expected to be complete by 30 June 2009.

Under the current allocation system South Australia is over-allocated in Zones 1A, 3A, 4A, 5A and 7A in the Tertiary Limestone Aquifer. Metered use in Zone 10A from the Tertiary Limestone Aquifer indicates that though water allocation under the crop area based system is within the Permissible Annual Volume actual extraction exceeds this volume. The South East Natural Resources Management Board and the South Australian Murray-Darling Basin Natural Resources Management Board will address the over-allocation issues in the South East and over use in Zone 10A through the respective water allocation plans, which are to provide for the adjustment of allocation and use within permissible limits. A process has been initiated between the respective States' agencies to adopt agreed approaches to these issues for consideration by the Border Groundwaters Agreement Review Committee.

South Australia continued to progress quantification of the water balance impacts of plantation forestry on groundwater in the Lower Limestone Coast, and to develop policy to manage those impacts through amendments to the Lower Limestone Coast Water Allocation Plan. The preliminary estimates of the quantities of water utilised by plantation forestry is a significant component of the regional water balance.

Victoria advises in its report that a new strategic approach has been applied to improve the management of groundwater in the Tertiary Limestone Aquifer in the West Wimmera. This approach reflects the new understanding of the resources to be considered to be a non-renewable resource for water allocation and management purposes. For the purposes of groundwater management, the West Wimmera has been divided into a number of distinct management units, for each of which a separate management plan has either been prepared or is under preparation. The revised direction will streamline the development and implementation of the groundwater management plans and ensure consistent management of the groundwater across the entire aquifer. A single groundwater management plan will be developed for the entire Tertiary Limestone Aquifer in the West Wimmera area. The development of the individual management plans in Apsley, Telopea Downs and Kaniva areas has been halted. The draft groundwater management plan for the West Wimmera is due in 2009. The location of the proposed management area for the West Wimmera is shown in Figure 7.

4. Funding

In Victoria:

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

In South Australia:

- investigation, monitoring, water allocation licensing and resource management are the responsibility of the Department of Water, Land and Biodiversity Conservation; and
- community based policy, management and water allocation planning are conducted in South Australia by the South Australian Murray-Darling Basin Natural Resources Management Board and the South East Natural Resources Management Board.

Table 9 sets out the level of funding for 2007-2008.

Table 9 Funding for 2007- 2008

State	Investigations	Monitoring	Resource Management	Agreement Management	Total
Victoria	$62,786	$93,155	$156,490	$71,493	$383,924
South Australia	$24,300	$135,800	$136,500	$54,700	$351,300
Totals	$87,086	$228,955	$292,990	$126,193	$735,224

FIGURES

Figure 1 The Designated Area and zones

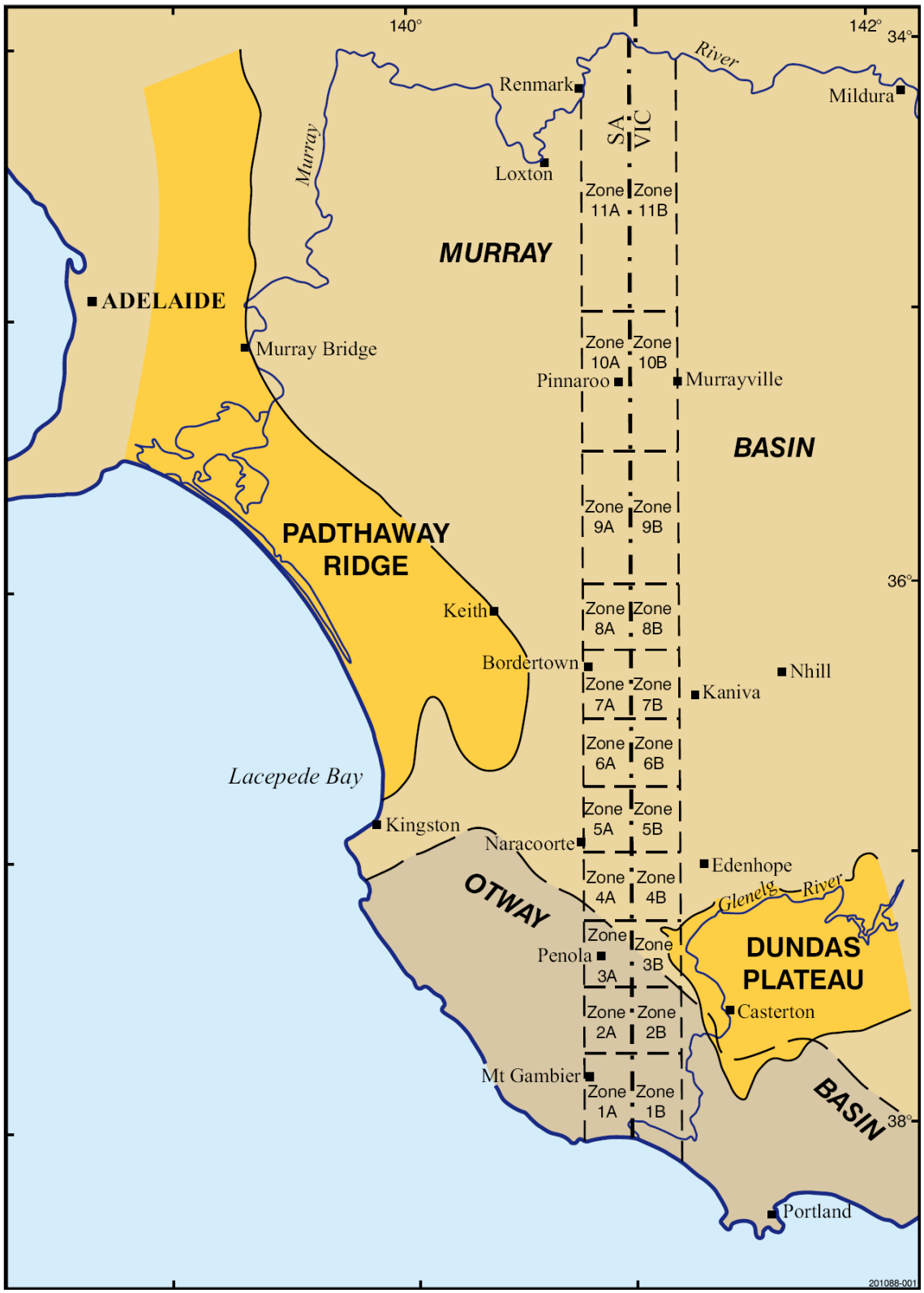


Figure 2 The Designated Area, zones and hydrogeological provinces

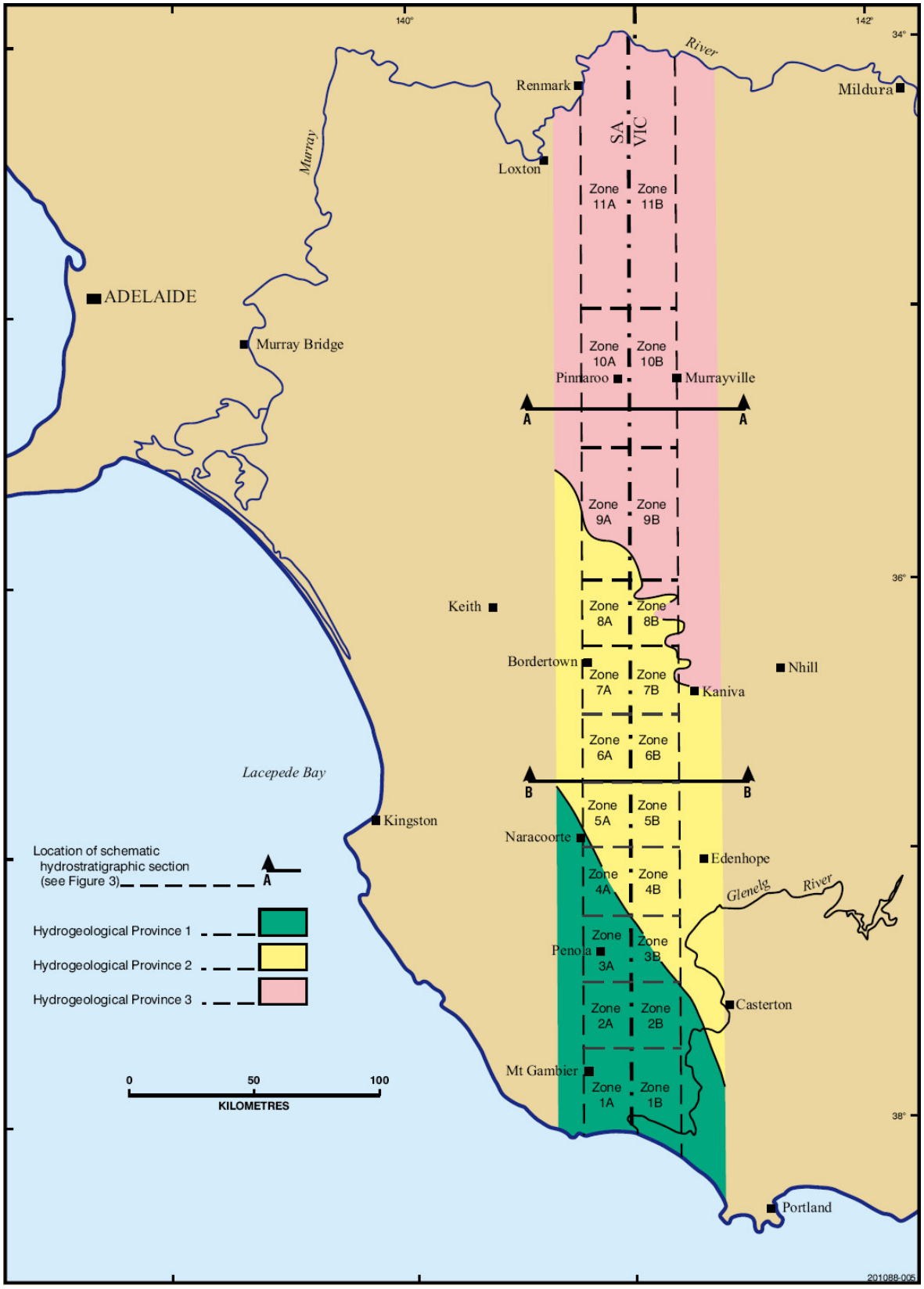


Figure 3 Schematic hydrostratigraphic cross-sections through the Designated Area
(See Figure 2 for the location of the cross sections)

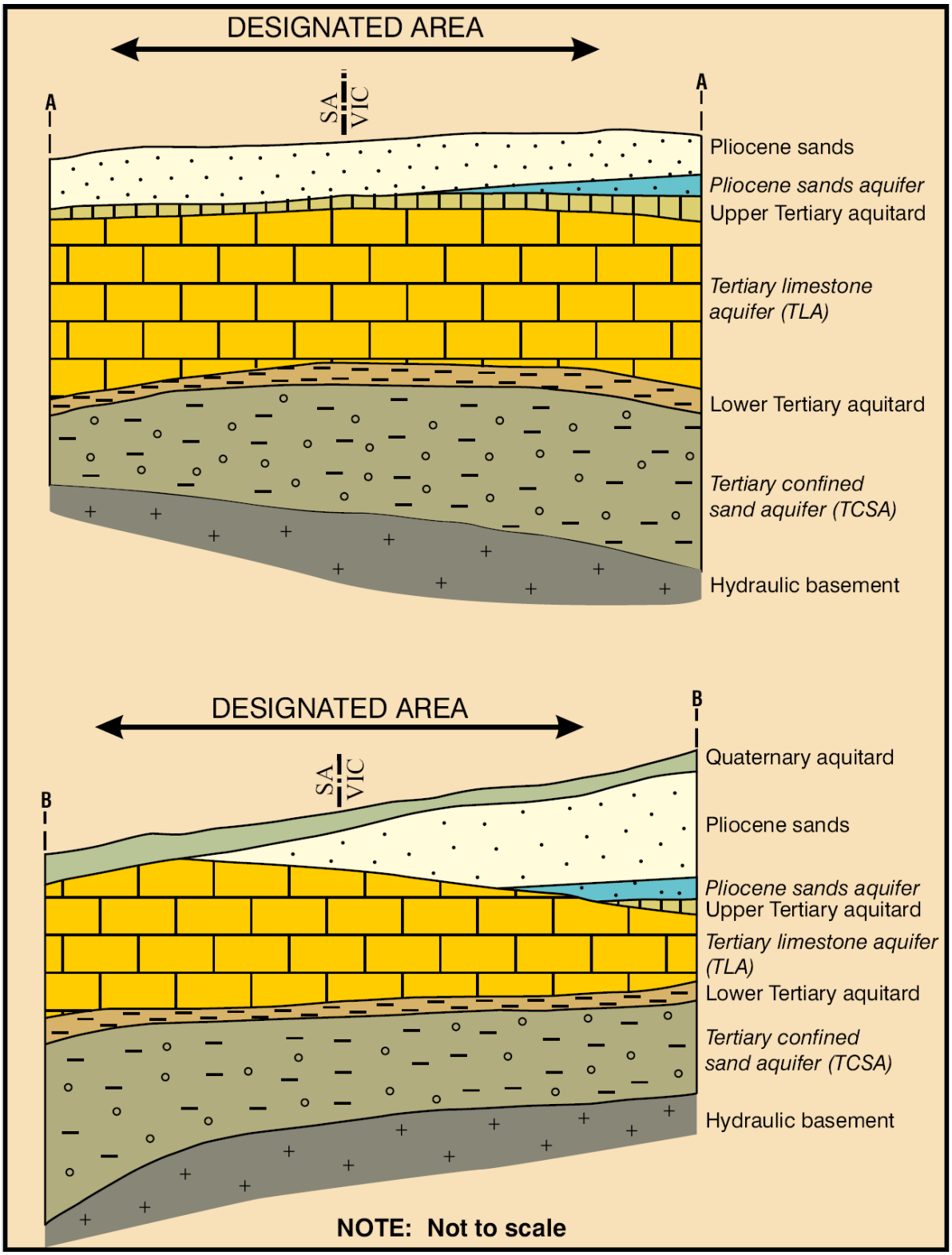


Figure 4 Relationship of other management areas in Victoria and South Australia to the Designated Area

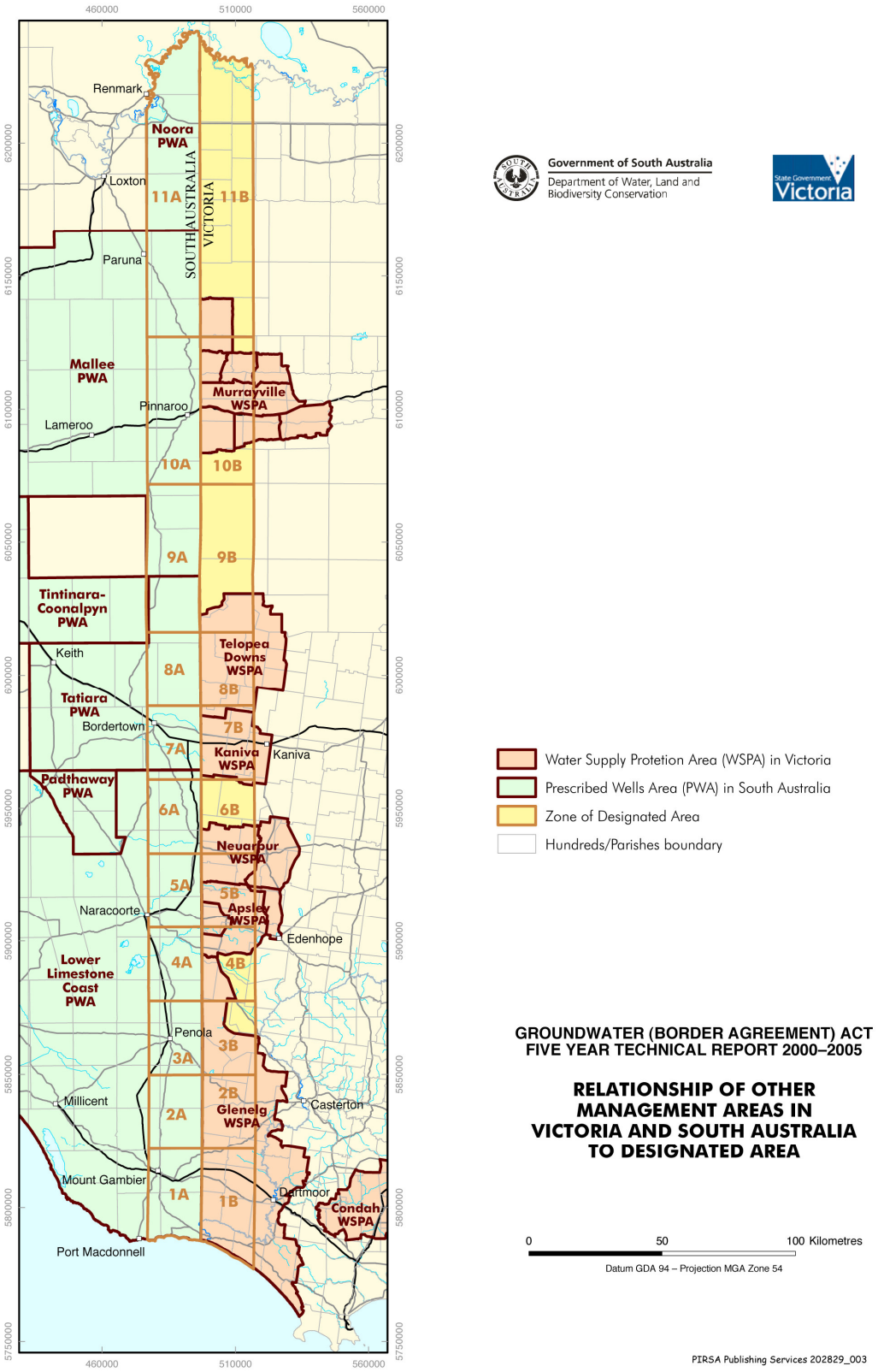


Figure 5 Map of groundwater level trends for the Tertiary Limestone Aquifer

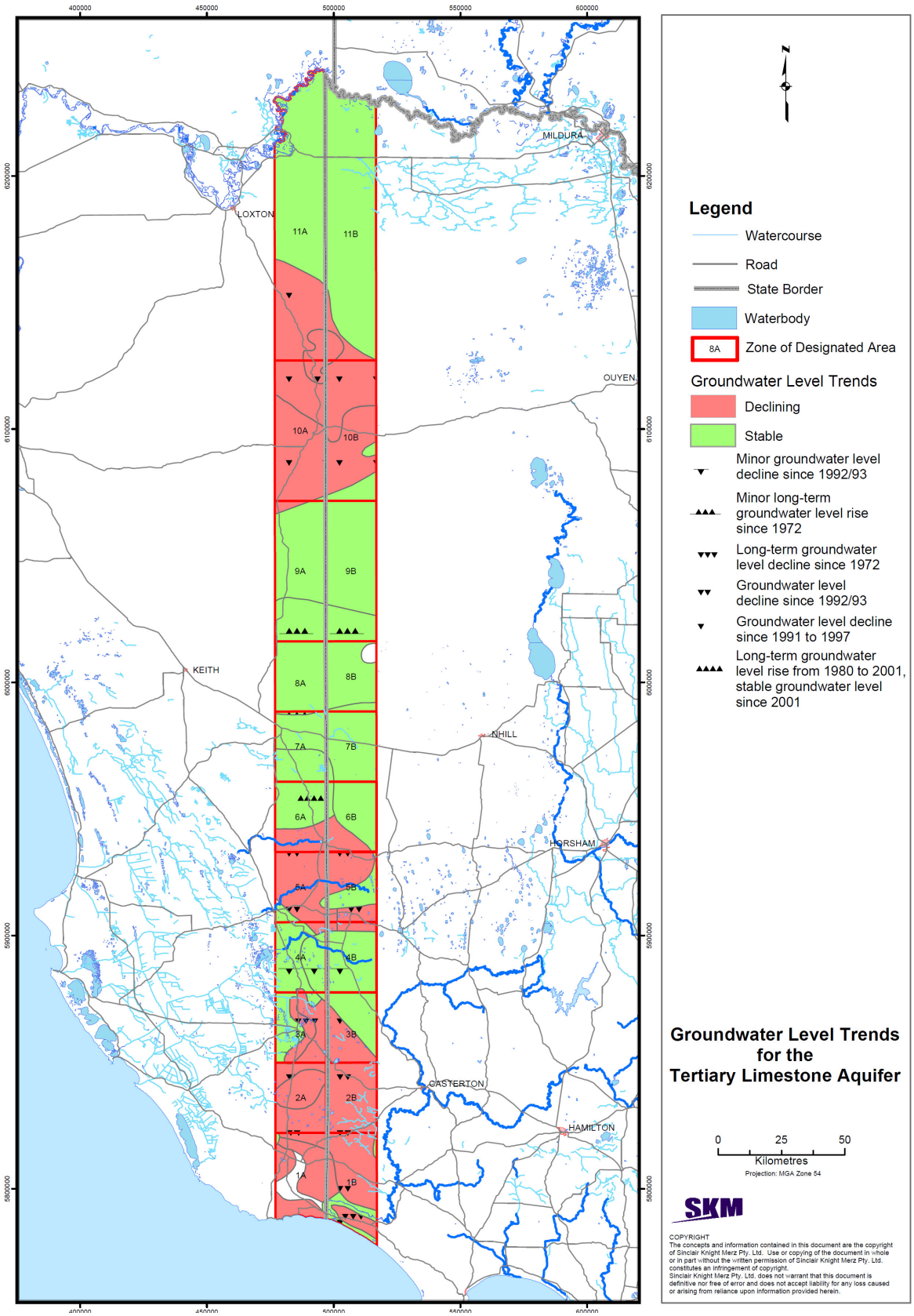


Figure 6 Map of groundwater level trends for the Tertiary Confined Sand Aquifer

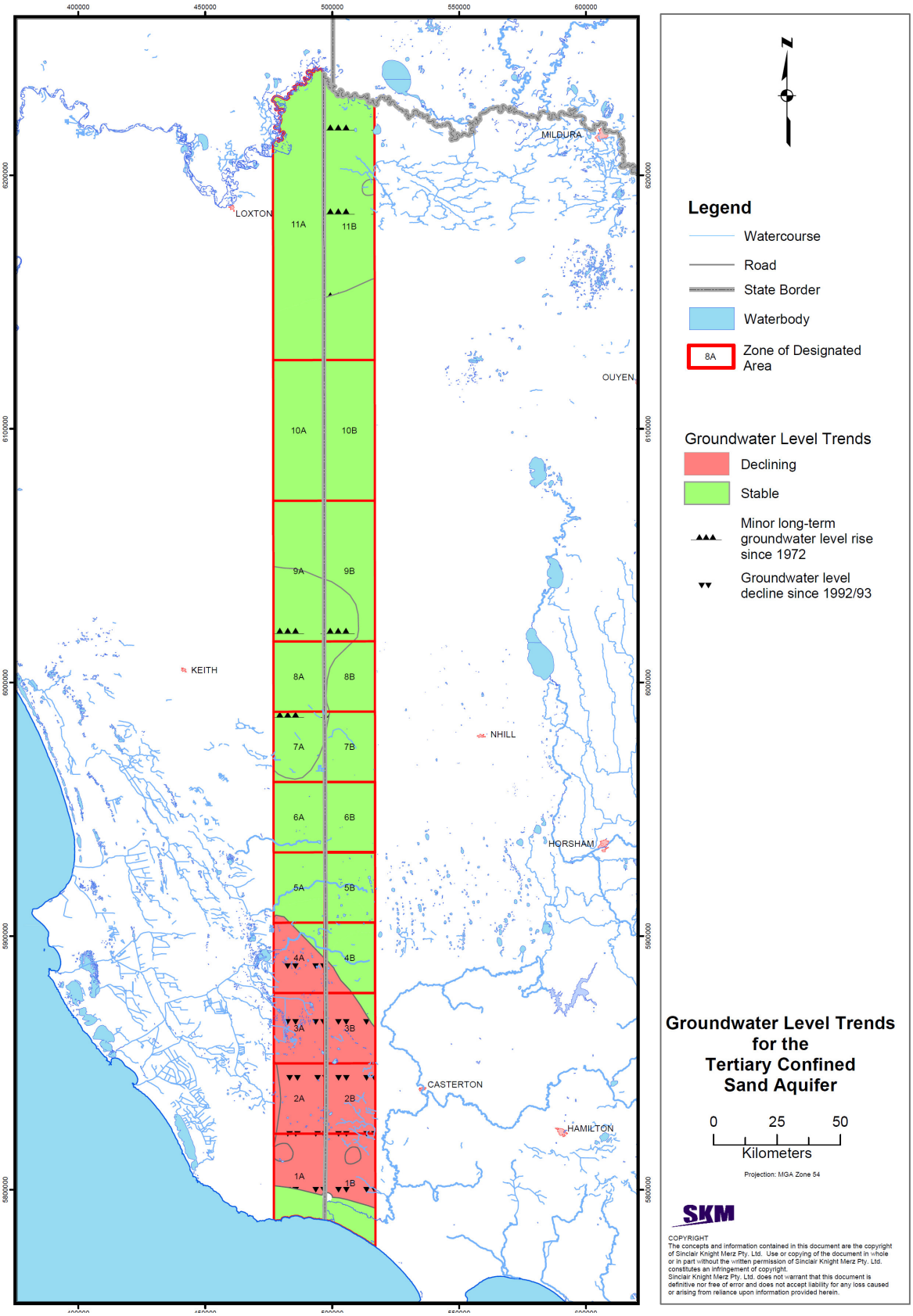
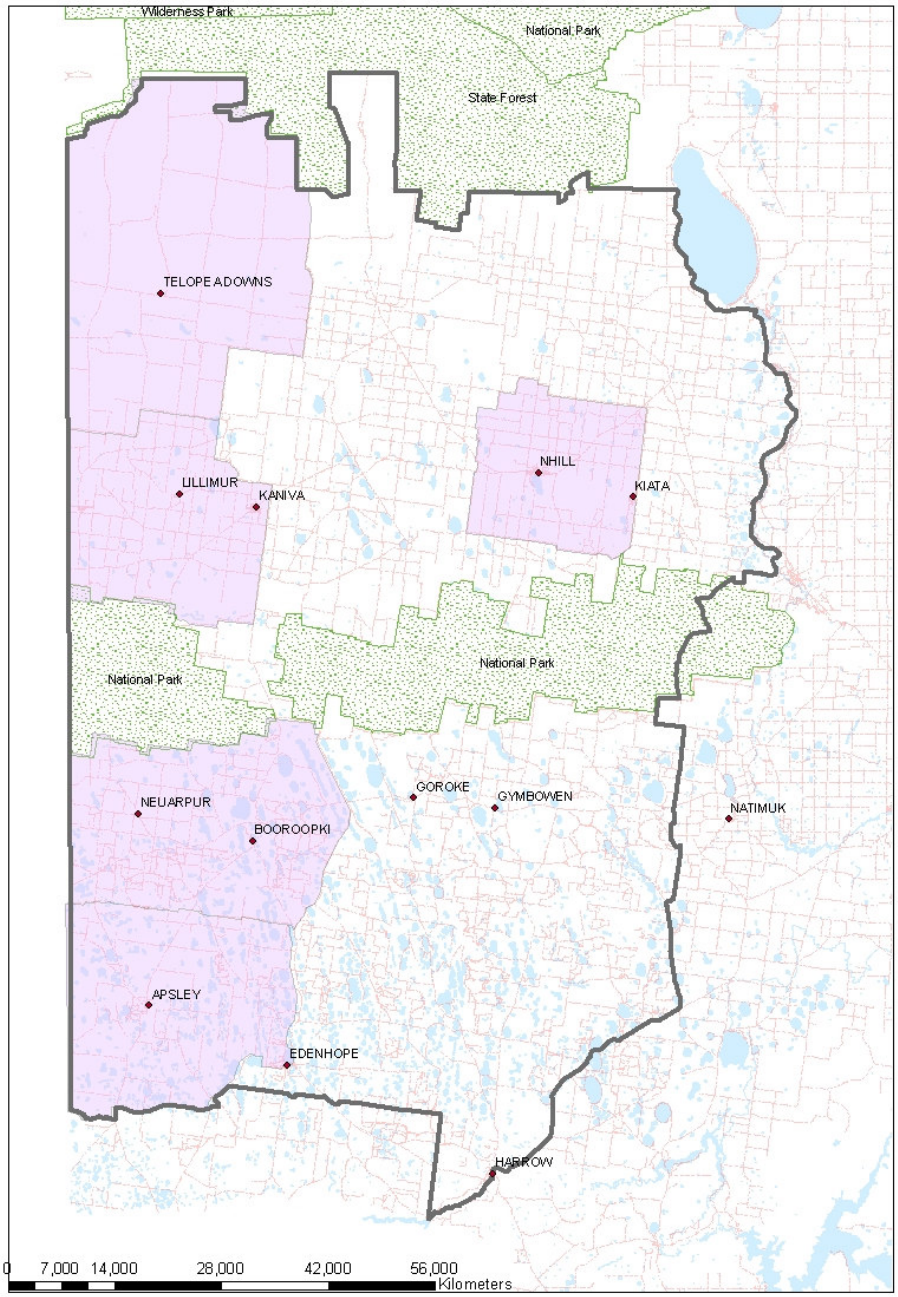


Figure 7 Proposed boundary of the West Wimmera groundwater management area



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(2) 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 each zone of 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 a licensing system.

"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 (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.*