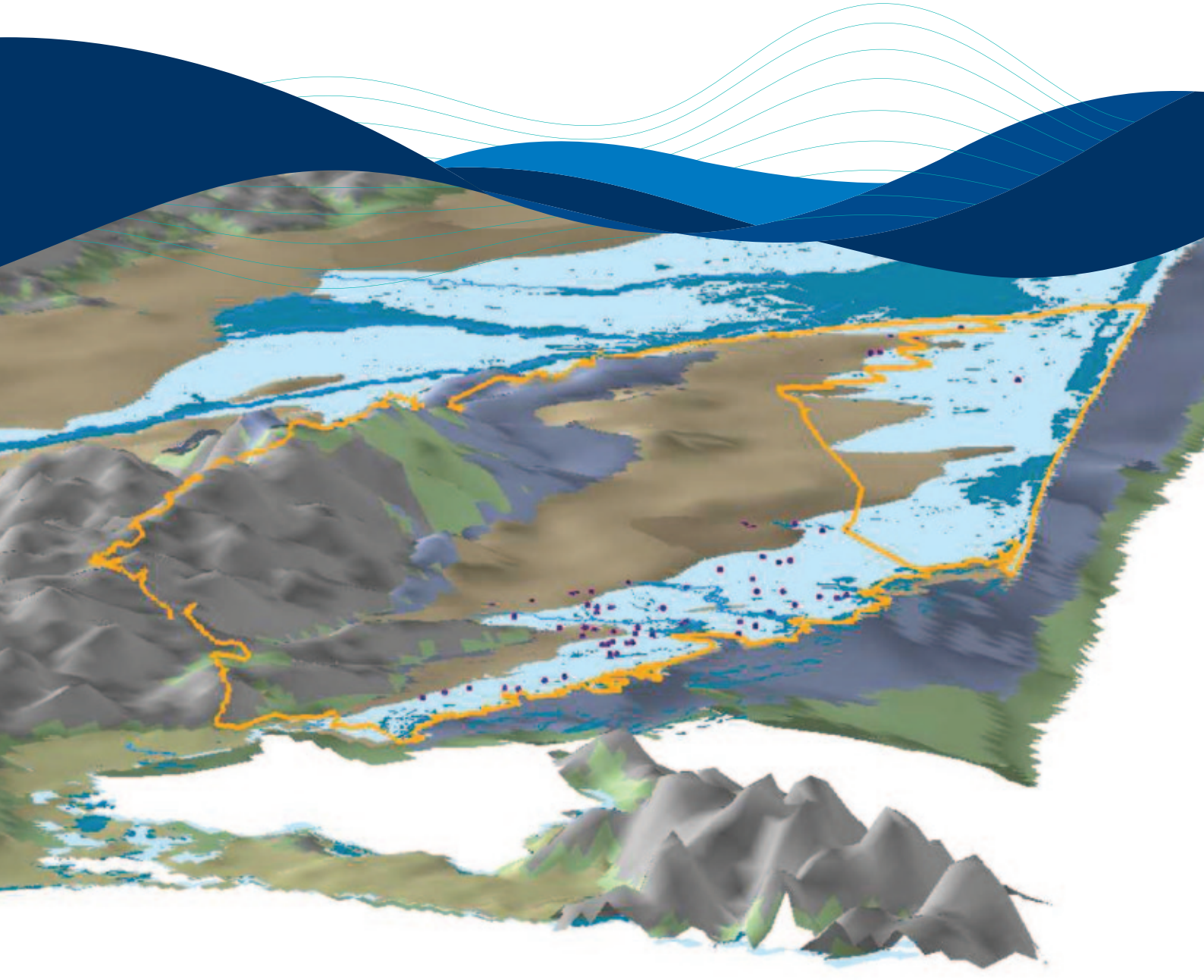
Southern Rural Water

Managing Water. Serving Communities.

Groundwater Management Plan

Yarram Water Supply Protection Area



Approval

I, Tim Holding, Minister for administering the *Water Act 1989,*
approve this plan in accordance with section 32A (6) of the *Water Act 1989.*

Tim Holding, MP
Minister for Water
Date: 14/10/2010

Preface

The Yarram Groundwater Management Plan has been prepared to better manage the groundwater resources of the Yarram Water Supply Protection Area.

A consultative committee, as listed below, has had input into the development of this Plan via extensive discussions and considerations of technical work.

The Yarram Groundwater Management Plan consultative committee members:

Mr Bill Bodman (Chair) Landholder
Ms Elizabeth Balderstone Landholder
Mr Gavin Egan Landholder
Mr Brian Field Landholder
Mr Eric Greenaway Landholder
Mr John Mattern Landholder (Deceased)
Mr Patrick Moore Landholder
Mr Michele Staley Landholder
Mr Noel Maud Gippsland Coastal Board
Cr Peter Garlick Wellington Shire
Mr Graeme Jackson South Gippsland Water
Ms Eleisha Keogh West Gippsland Catchment Management Authority
Mr Terry Flynn Southern Rural Water

These members were appointed by the Minister for Water under section 29 of the Water Act 1989. The appointments were made in consultation with Southern Rural Water, the Department of Sustainability & Environment and the Victorian Farmers' Federation.

The Yarram Groundwater Management Plan ex officio observer:
Mr Simon Baker Department of Sustainability and Environment

Others who participated in the committee as alternates included
Mr Chris McAuley Department of Sustainability and Environment
Ms Tracey Jones West Gippsland Catchment Management Authority
Mr Scott Mattern Landholder
Cr Jeff Amos Wellington Shire

The contributions of the previous Consultative Committee members not in the final committee are also acknowledged:

Ms Narelle McLeod Landholder
Mr Neville Staley Landholder
Mr Ross Alexander Australian Drilling Industry Association
M Bruce Atkin Department of Primary Industries
Ms Jeanette Harding Gippsland Coastal Board
Mr Deric Liddelow Southern Rural Water
Mr Brian Ashworth South Gippsland Water
Ms Penny Neumann West Gippsland Catchment Management Authority
Ex officio observers: Mr Cameron Welsh Southern Rural Water and Mr Gordon Walker Department of Sustainability and Environment

Glossary

Term/Acronym	Description
Act	*Water Act 1989*
AHD	Australian Height Datum or mean sea level.
Aquifer	Geological structure or formation permeated or capable of being permeated permanently or intermittently with water
Works Licence	A Works Licence is issued under section 67 of the Act and is required for construction or alteration of a bore
Corporation	Southern Rural Water Corporation
Department	The Department of Sustainability and Environment
Drawdown	The difference between the observed water level in a bore before and after groundwater pumping occurs
Groundwater Licence Entitlement	The total amount of groundwater authorised to be taken each year under a groundwater licence
GMS	Groundwater Management System (GMS) is a database of groundwater information managed by the Corporation and the Department
Groundwater Licence	Licence issued under section 51 of the Act to allow the take and use of groundwater
Management Plan	The Yarram WSPA Groundwater Management Plan
Management Zone	An area of the WSPA named and approximately delineated in Schedule 1
ML	Megalitre (One million litres)
Off-Property transfer	A transfer of a groundwater licence to a person to take and use groundwater from a bore on different land to which the licence was originally issued.
PCV	Permissible Consumptive Volume
WSPA	Water Supply Protection Area

Contents

1 Introduction

This management plan has been prepared under Division 3 of Part 3 of the Act for the Yarram Water Supply Protection Area (WSPA) that was declared on 4 November 2002. The management plan relates to the groundwater resources of the WSPA.

Groundwater levels in the WSPA have been in decline for approximately 40 years, mainly as a result of offshore fluid extraction from oil and gas production.

The management plan does not place any restrictions on existing groundwater users. However; new development can only occur as a result of transferring existing groundwater licences. Restrictions on transfers are in place in certain management zones within the WSPA to mitigate seawater intrusion and impacts on streams, and to avoid further localised groundwater declines in the intensively developed area around Yarram.

The management plan outlines a monitoring program to assess interactions between groundwater and surface water and to examine the issue of seawater intrusion.

2 Objective of the Management Plan

The objective of a management plan, as set out in the Act, is to make sure that the *water resources of the area are managed in an equitable manner so as to ensure the long-term sustainability of those resources*.

Water level declines are expected to continue in the WSPA, irrespective of the activities of groundwater users, due to offshore fluid extractions. The part that the management plan plays in ensuring long-term sustainability of the water resources is to prohibit the issue of any further groundwater licences. Restrictions are also placed on licence transfers within the WSPA.

This management plan meets its objectives because;

- It is not considered that existing licensed groundwater use in the WSPA is unsustainable.
- The prescriptions applied take account of the environment (streamflows / groundwater dependant ecosystems), saline intrusion and bore interference.
- Equitable means that everyone is treated fairly. The plan makes no prescriptions which favour one groundwater user over another.

3 Legal Definition of Plan Area

The Yarram WSPA is defined in Plan No. LEGL./02-032 lodged with Central Plan Office, Crown Land Registry, Department of Sustainability and Environment.

Plan No. LEGL./02-032 defines the WSPA as extending over all depths within the WSPA Boundary, except where it underlies the Giffard GMA, where the Yarram WSPA is all formations greater than 200m depth (see Figure 1).

The Permissible Consumptive Volume (PCV) for the WSPA is set by the Minister. The current PCV for Yarram is 25317ML.

4 Administration and Enforcement of the Plan

The Corporation has the duty of administering and enforcing the management plan.

5 Physical Extent and Characteristics of the Yarram WSPA

The WSPA is located south of the Strzelecki Ranges and includes the on-shore area of the Gippsland Basin (see Figure 1). This is a relatively small component of the whole Gippsland Basin but covers an area where groundwater is extracted primarily for irrigating pasture in Yarram and surrounding districts. The WSPA also incorporates forested areas along the Strzelecki Ranges comprising State Parks or plantation forestry.

Geologically the WSPA is located in the Seaspray Depression[13]; a structure bounded by the Baragwanath Anticline to the north and major faulting along its flanks. The structure plunges steeply to the east into Bass Strait. It includes the aquifers in the Latrobe Group and the shallower Balook Formation which are the main sources of water used for irrigation. In the Yarram area, the Latrobe Group is overlain by the Balook Formation. The Latrobe Group and Balook Formations are in hydraulic connection. From Woodside to Golden Beach, the Latrobe Group occurs much deeper, underlying the Gippsland Limestone and Boisdale Formations.

These aquifers are overlain by the Haunted Hills Formation. The Haunted Hills Formation is a shallow unconfined aquifer, incised by local streams. It is low yielding and generally poorer quality than the other aquifers, and is typically suitable for stock watering and dairy wash purposes.

The Latrobe Group and Balook Formation aquifers are generally confined by overlying bands of clay and limestone but come close to the surface or outcrop at the margin of the basin, where they are draped over the Baragwanath Anticline north of Yarram and at Longford. The aquifers rely on recharge from rainfall and stream bed infiltration along their outcrops. This is the area where rainfall can most readily recharge the aquifer. Figure 2 shows a schematic cross-section of the aquifers in the WSPA.

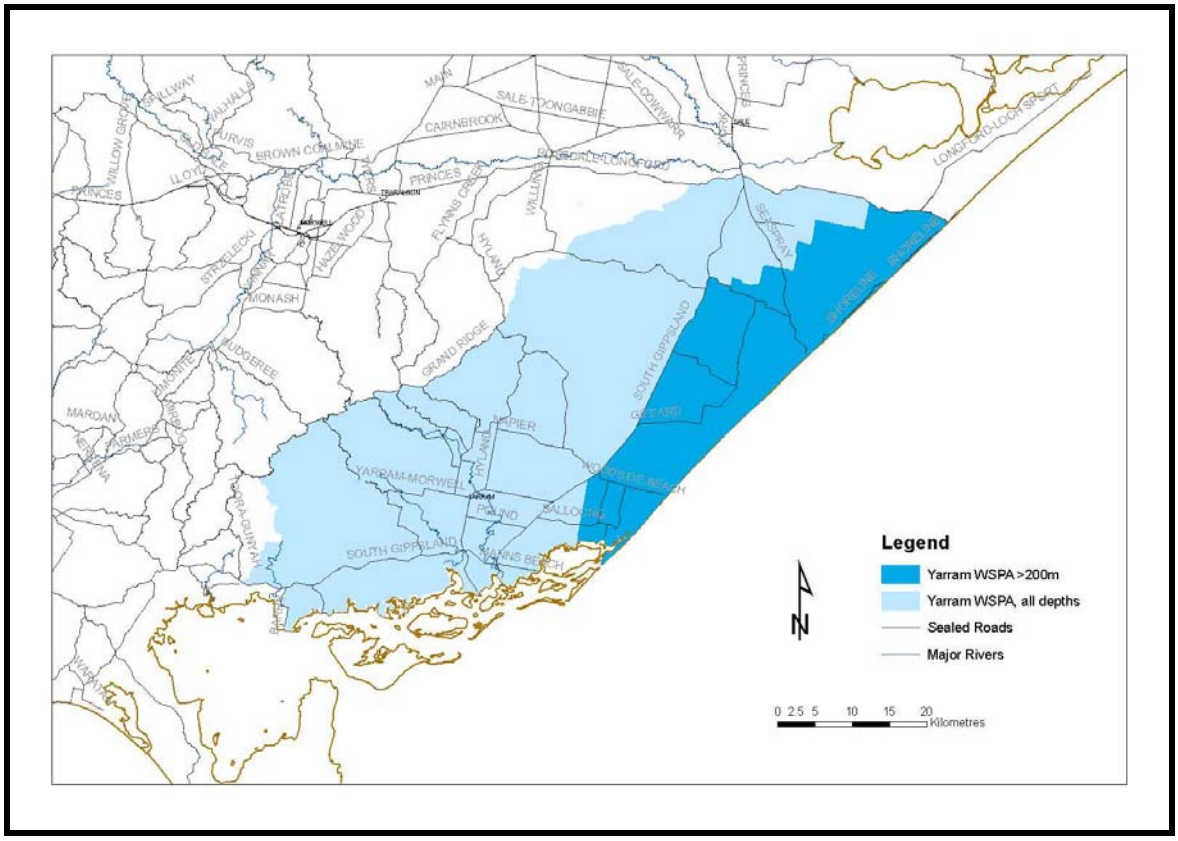


Figure 1 Map of the Yarram WSPA

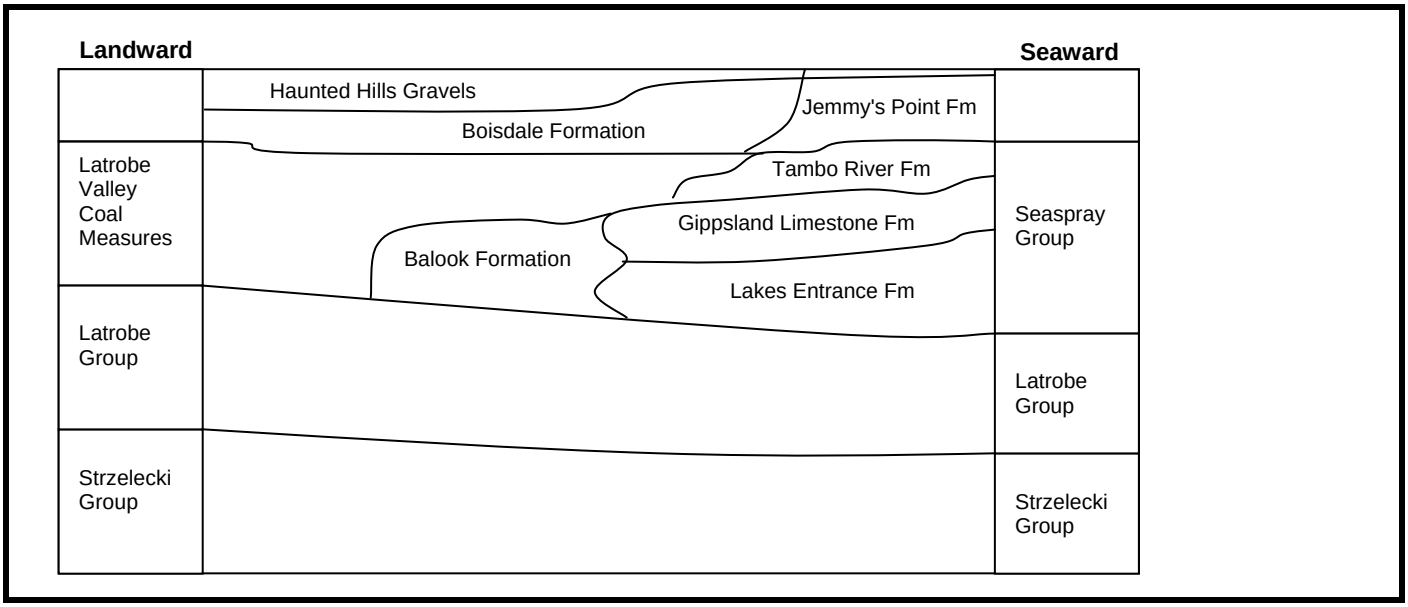


Figure 2 Schematic cross-section of the aquifers in the Yarram WSPA

6 Groundwater Entitlements and Use

The extraction of groundwater for purposes other than domestic and stock use is authorised under a groundwater licence. There are 83 groundwater licences in the WSPA that authorise a total of 25,317 ML as specified in the PCV. Figure 3 shows the location of the groundwater licences. People have rights to take groundwater for domestic and stock use that do not require a licence. The management plan does not place any additional requirements on the use of groundwater for domestic and stock purposes.

Approximately 80% of the groundwater used in the WSPA is for irrigation purposes. Groundwater is also extensively used in dairies for cooling and wash-down and for other commercial and industrial use, including ESSO Longford. South Gippsland Water has a licence to use this groundwater for its Yarram urban water supply.

In 1998 a cap was placed on further allocations because the long term groundwater decline was considered to be unsustainable.

Metered groundwater use is considerably less than the total groundwater licence entitlements. The amount of groundwater used each year varies according to seasonal conditions as shown in Table 1.

Year	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Metered use (ML)	6,682	12,205	10,945	8,100	11,649	16,009	12,218	13,891	11,778

Table 1 Groundwater Usage

Actual groundwater use, however, will be higher than metered use, as groundwater extractions occur from non metered domestic and stock bores. There are 1067[14] registered domestic stock and bores in Yarram WSPA. It is not known how many of these bores are active, but annual usage is estimated to be in the order of 1,000 ML/yr.

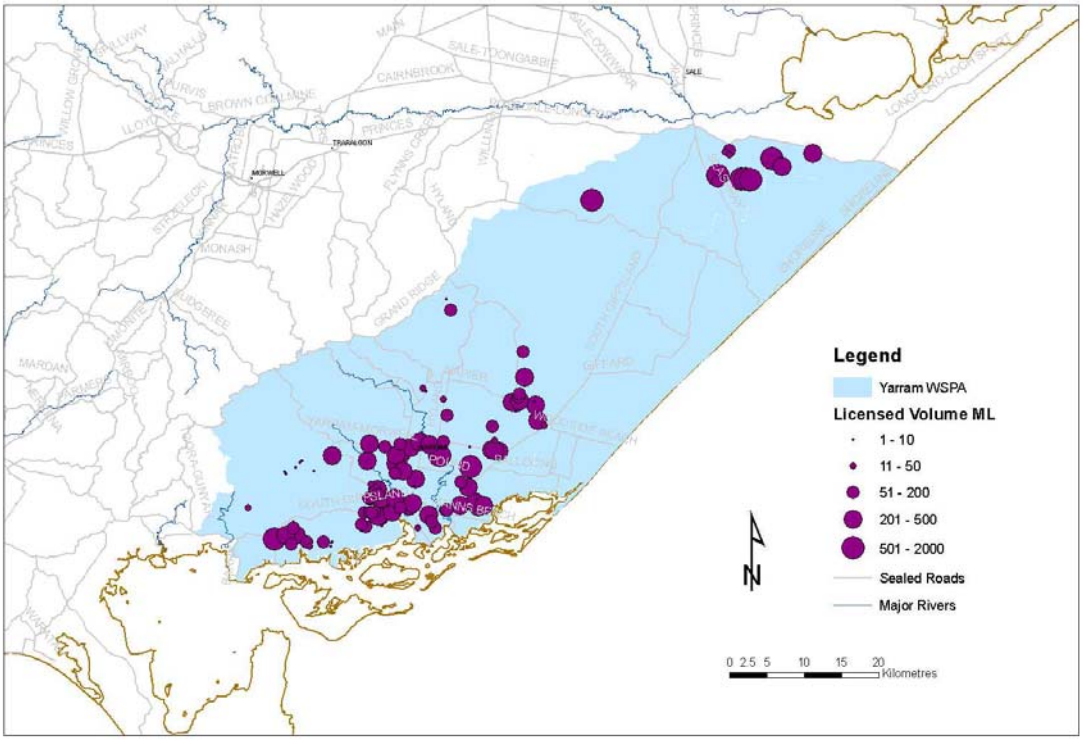


Figure 3 Map of Groundwater Licences

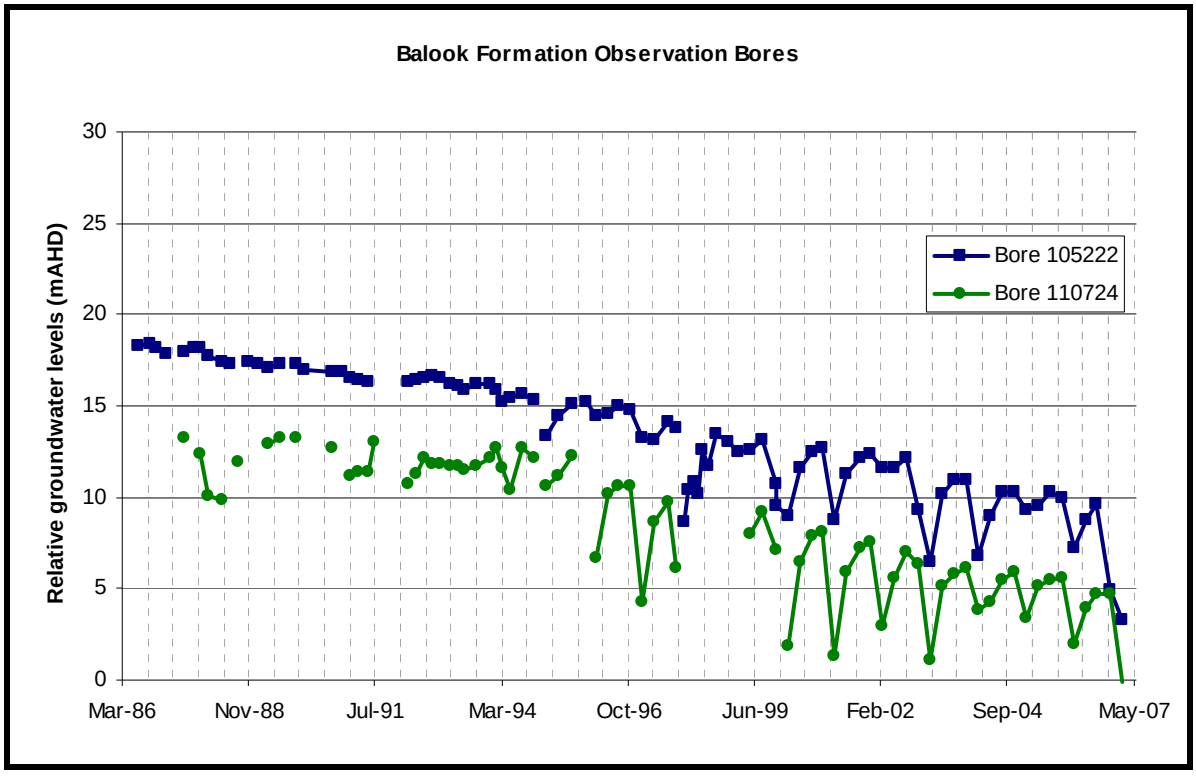
7 Water Level Trends

Onshore groundwater levels in the Yarram WSPA have been in decline since measurement commenced in 1983. The hydrographs in Figure 4 are typical of the Balook Formation aquifers, which show a decline up to 0.5 m/yr and Latrobe Group aquifers, which have a steady water level decline of 1.1 m/yr.

Since the late 1990s, seasonal fluxes are apparent and are attributable to irrigation extractions that peak during the summer months.

There are also several observation bores in the same aquifers but outside the Yarram WSPA, and information from pressure levels observed offshore. The committee was presented with sufficient evidence[15] to conclude that over the last few decades the extraction of fluids (oil, water and gas) offshore for petroleum production has made a significant and consistent contribution to the decline in groundwater levels onshore.

Other potential causes of groundwater level decline have been considered, such as climate change and land use change, but were found to have a relatively less significant impact on groundwater recharge over the long term at a regional scale than fluid extraction[15].



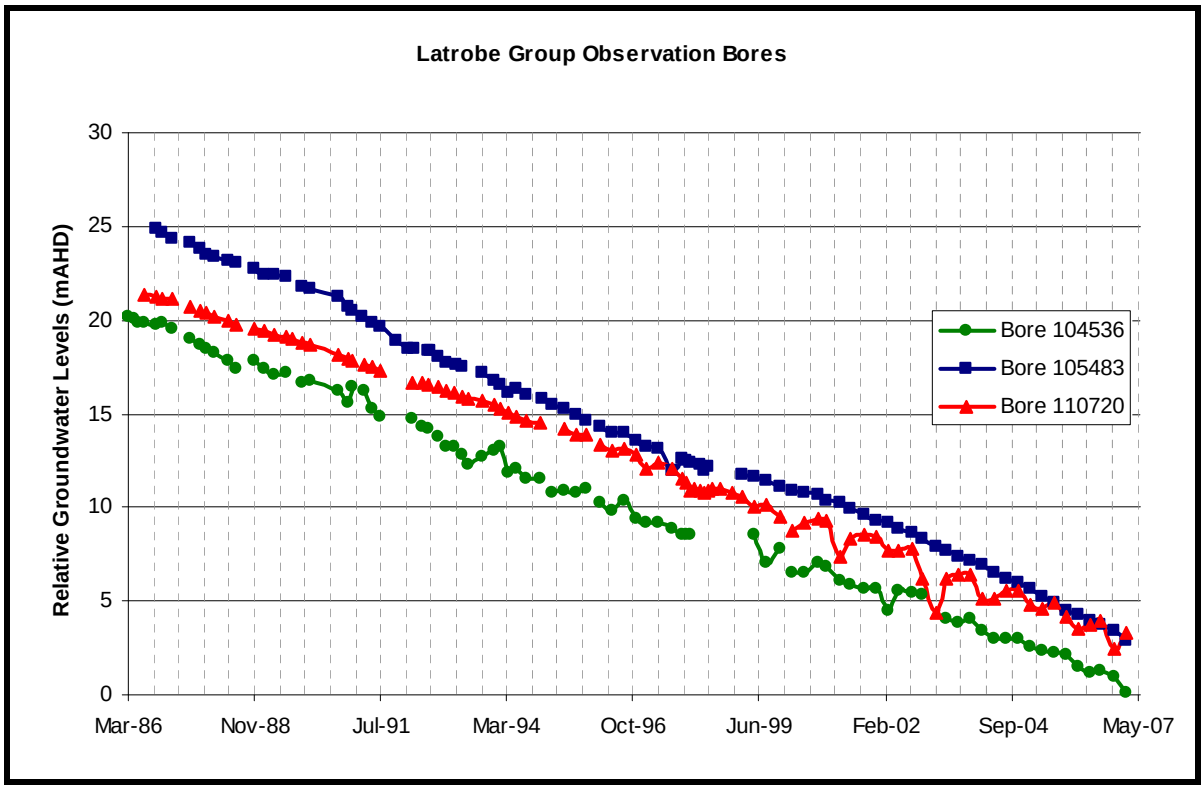


Figure 4 Groundwater Levels

8 Impacts from Declining Groundwater Levels

Declining groundwater levels may impact on water levels in groundwater bores, groundwater quality, groundwater dependant ecosystems and subsidence.

It could impact on existing groundwater users in the following ways[13]:

- loss of artesian (free flowing) conditions;
- existing pumps (centrifugal) may need to be replaced with pumps that can operate at greater depths (turbine);
- pumps need to be extended to a greater depth;
- the cost of pumping increases; and
- where the pump housing depth is insufficient the bore may need to be replaced.

In 2004[13] an assessment of the cost impact of declining groundwater levels on irrigators in the WSPA over a 30-year timeframe was undertaken. The assessment recommended that for planning purposes a cost impact of $10 million should be assumed, based on the cost to replace bores and lower pumps. This issue was addressed through a National Water Initiative project to assist irrigators who may have or could incur losses due to the declining groundwater levels.

In addition, continuing decline across the WSPA may cause saline intrusion from offshore or surrounding formations, affecting regional water quality.[14]

Declining groundwater levels may also impact on groundwater dependant ecosystems such as streams and wetlands[9&10]. Further monitoring and investigations are needed to understand these impacts; however rules may be applied to preserve flows in the interim.

Declining groundwater levels are known to cause land subsidence; this has occurred in the Latrobe Valley due to groundwater extraction from the open cut coal mines. It is postulated that the extraction of fluids offshore could result in coastal subsidence. A four-year survey program conducted by the Department of Primary Industries which started in 2004 did not detect subsidence along the Gippsland coast. This does not mean coastal subsidence will not occur[11].

9 Restrictions on Taking Groundwater

The PCV determines the maximum volume of water that can be extracted from the WSPA; however, the management plan does not place specific restrictions on taking groundwater.

If necessary, the Corporation is able to temporarily qualify rights to groundwater under section 33AAA of the Act if a water shortage occurs - for example, because regional drawdown is affecting access to groundwater by users, or if continued pumping may cause saline intrusion.

Any restrictions applied, along with the reason for their application, will be included in the annual report.

10 Licence Transfers

10.1 General

Allowing licences to transfer from one person or business enterprise to another can bring significant benefits to both individuals and the broader community. It allows water to move to the land and enterprises where the most value will be generated. It also allows individuals to adjust their enterprises depending on their individual circumstances, and to be more flexible where water from sources other than groundwater is also available.

Under the Act, a licence holder may apply to transfer a licence to another person either temporarily or permanently. A licence may be transferred as a result of the transfer or conveyance of a property on which the licence is used, or it may be transferred to an owner or occupier of other land (off-property transfer).

In considering an application to transfer a licence temporarily or permanently, the Act requires the Corporation to undertake a thorough assessment of the application. An application to transfer a licence is not automatically approved. In deciding whether or not to approve an application the Corporation must have regard to a whole range of matters including:

- availability of water now and in the future;
- adverse effects that an approval may have on existing users, on waterways and aquifers and on the environment; and
- existing and projected water quality in the WSPA.

When an application is made, the Corporation will assess whether groundwater extractions at the new site will cause adverse and material interference to any nearby groundwater user. If interference is likely, the Corporation may set transfer conditions to minimise interference or it may refuse to approve the application.

Under the management plan there are no specific restrictions placed on the transfer of a groundwater licence resulting from the transfer or conveyance of land on which the groundwater is taken or used.

Three management zones have been established as shown in Schedule 1. The following rules apply to each management zone.

10.2 Coastal Zone

The Coastal Zone is bounded by the coastline at Port Welshpool, the South Gippsland Highway and Albert River. In this management zone there is a risk of seawater intrusion resulting from regional groundwater declines. As a precautionary measure to mitigate the risk of seawater intrusion, licences may be transferred within but not into the management zone; therefore there will be no increase in groundwater licence entitlements in the zone. If saline intrusion is measured, it will be reported in the annual report.

10.3 Central Zone

The Central Zone is the area south west of Merrimans Creek to the Albert River. It includes the major irrigation area around Yarram. This area has a high density of bores and a high volume of groundwater licence entitlement. It also has a number of streams that cross outcropping sand beds of the Balook and Latrobe Group Formations. In this area there is risk of interference between bores and impacts from groundwater extractions on stream flows. Permanent licences may be transferred within but not into the management zone; therefore there will be no increase in groundwater licence entitlements in the zone. Temporary transfers into Central Zone will be permitted until the plan is reviewed. This is to accommodate existing practices on the basis that there is not evidence that it is unsustainable.

10.4 Eastern Zone

The Eastern Zone extends from Merrimans Creek north east to the WSPA boundary. East of Yarram the Balook Formation is absent and the Latrobe Group Formation occurs at much greater depth, hence there are no bores tapping the aquifer in this area. The exception to this is at Longford where the aquifers approach the surface and are used for irrigation and industrial use. Licences may be transferred into and within this management zone.

10.5 Bore Interference

On some occasions interference between bores occurs. Sometimes this follows the approval of the construction of a new bore or as a result of an increased rate of extraction from an existing bore. This is a concern in Coastal Zone and Central Zone where the bore density is highest. Interference criteria for new bores in Coastal Zone and Central Zone is set at 10% of the available drawdown in the nearest bore, provided the nearest bore was constructed to a design that allowed for a decline of one metre per year over the predicted life span of the bore (30 years), and is properly maintained.

10.6 General Transfer Arrangements

Approval of an application to transfer may be subject to technical assessments to determine bore interference and impacts on surface water bodies. This may result in a refusal of application or licence conditions such as an appropriate extraction rate. The Corporation's procedures will also be used in circumstances where a licence holder wishes to change the groundwater extraction site.

Prescription

1. The Corporation must not approve an application for the permanent or temporary transfer of a licence under section 62 of the Act into the Coastal Zone.

2. The Corporation must not approve an application for the permanent transfer of a licence under section 62 of the Act into the Central Zone.

11 Restrictions and Prohibitions on the Issue of Licences

11.1 Introduction

For licensing administration purposes new groundwater licences sometimes need to be issued. They may need to be issued to allow for groundwater licences to be amalgamated or divided, or where there is a requirement for a new bore or different property to be included on a groundwater licence. It may also be necessary to issue licences in some cases as a result of transfers. No new groundwater licence will be issued if the PCV would be exceeded. In the event licences are surrendered, revoked or not renewed it is intended the volumes will not be reallocated. This is preferred because it reduces the total volume of entitlements and the potential usage. The Corporation will identify the total authorised licensed volume in its annual report on the administration and enforcement of the management plan.

New works licences may also need to be issued. The Corporation will make appropriate assessments and attach relevant conditions in accordance with the provisions of the Act that includes an assessment of extraction rate, distance to existing bores and other factors.

All new bores should be constructed to allow for a regional and localised decline over the life span of the bore (predicted to be 30 years).

11.2 Dairy Licences

In 2004, the Government released the White Paper – Our Water Our Future identified that dairy use had been allowed but not licensed as a commercial use. Work by the Department of Primary Industries indicates that the average water use in a large dairy is around 13ML per year.

When renewing dairy licences, the Corporation will assess the amount of groundwater used in each dairy. Any adjustments to licences will only be made in accordance with any state-wide policy approved by the Minister for Water.

11.3 Shallow Bores and Groundwater Dependant Ecosystems

In the Yarram area, the Haunted Hills Formation overlying the Balook Formation and Latrobe Group aquifers is a valuable shallow resource for stock and domestic purposes and the environment, where it discharges water to streams and soaks. Its water quality and yield are not generally suitable for irrigation but if other resources become stressed it may become an economically viable alternative. To preserve this aquifer for less intensive stock and domestic use and groundwater dependant ecosystems, it is recommended that no new licences are permitted. This applies to any applications to transfer into the Haunted Hills. Exceptions may apply to accommodate historical unlicensed use for commercial purposes (eg dairy washing).

11.4 State Water Register

State government policy requires that all groundwater and surfacewater licences be migrated to the State Water Register. This will standardise the conditions on all licences. Schedule 4 contains a summary of standard licence conditions. Licences within the WSPA will have a standard licence term of 15 years applied when transferred to the register. It is efficient to migrate the licences though the implementation of this plan.

Prescription

3. A new licence may be issued to overcome an administrative oversight or other anomaly or through a transfer of entitlement provided the PCV is not exceeded.

4. The Corporation may issue or amend a groundwater licence in accordance with any state-wide policy and the PCV (by application to the Minister) will be adjusted accordingly.

5. The volume of any groundwater licence that is surrendered, revoked or not renewed, cannot be reallocated other than for the purposes of Prescriptions 3 and 4.

6. No new licences are permitted in the Haunted Hills Formation. This applies to any applications to transfer into or within the Haunted Hills Formation. Exceptions may apply in accordance with Prescriptions 3 and 4.

7. All groundwater licences within the Yarram WSPA will be migrated to the State Water Register within 6 months of ministerial approval of the Management Plan.

8. The Corporation must report the details of any licence referred to in Prescriptions 3 to 5 in the annual report on the administration and enforcement of the management plan required under section 32 of the Act.

12 Metering Program

12.1 General

Metering water use enables better management of the water resource. It provides vital information on the amount of water used and the location of where it is used, which aids in the sustainable management of the resource. It also ensures that the water is shared equitably and licensees stay within their groundwater licence entitlement. Metering also provides benefits to the farming operation and can lead to greater water use efficiencies.

12.2 Installation of Meters

All operational bores in Yarram WSPA with groundwater licences were metered in 2001. If a new bore is constructed for commercial purposes, a meter must be installed on the new bore before it is used, in accordance with State and Corporation policy.

12.3 Maintenance of Meters

Meters need to be properly maintained to ensure accurate readings can be taken. Both the Corporation and the licensee have a responsibility to ensure meters are properly maintained.

12.4 Meter Readings

Meters will be read at least once a year and the data must be maintained on a database.

13 Bore Monitoring Program

13.1 Groundwater Level Monitoring

Monitoring of groundwater levels provides information to enable improved management of the resource and knowledge of response. Observation bores will be used to:

- assess annual and long term impacts on water levels from groundwater pumping;
- monitor saline intrusion
- monitor regional and local seasonal drawdown;
- examine relationships between different formations;
- provide information for future resource assessments; and
- assess management issues including evaluating potential interference between bores and relationships with surface water systems.

The management plan aims to effectively manage the groundwater resources of the WSPA. Monitoring is therefore critical to this aim. It will enable a better understanding of the relationship between the Balook and Latrobe Group Formations and between those formations and streams; particularly where the outcropping aquifer coincides with the stream path. The results of monitoring can also be used as a predictive tool for saline intrusion, and monitoring can also determine if saline intrusion occurs.

As the WSPA is a subsection of a much larger aquifer group, the monitoring network contributes to the monitoring and groundwater management in the entire Latrobe Basin.
At the time the management plan was prepared, 11 observation bores constructed to varying depths were monitored within the WSPA at 3-monthly intervals. Schedule 2 lists the monitoring bores and Schedule 3 shows the bore locations. The bores will continue to be monitored quarterly.

Monitoring will be undertaken on a strategic basis taking into account the hydrogeology of the WSPA, features such as lakes and wetlands and the location of production bores. The Corporation in conjunction with the Department will regularly review the monitoring program, and details of the monitoring strategy will be presented in an annual report prepared by the Corporation. New bores may be needed in some areas and others may no longer need to be monitored or monitoring frequency may need to be varied. As bores deteriorate they may also need to be replaced.

The Department will be responsible for quarterly monitoring, maintenance and replacement of observation bores. Any additional monitoring will need to be negotiated between the Corporation and the Department. The data from the observation bores will be recorded in the State's groundwater management system (computerised database) by whichever authority collects the data.

Prescription

9. The Department must ensure that monitoring bores are properly maintained and replaced if necessary; and
10. The Department and the Corporation must ensure that data collected from monitoring bores is entered into the groundwater management system.
11. The Department and the Corporation must ensure that water level monitoring and investigations are carried out at appropriate locations throughout the Yarram WSPA to:
    a) assess annual and long term impact on water levels from groundwater pumping;
    b) monitor saline intrusion
    c) monitor regional and local seasonal drawdown;
    d) examine interaction between groundwater, surface water and groundwater dependent ecosystems;
    e) provide information for future resource assessments; and
    f) monitor the impacts of groundwater pumping generally across the Yarram WSPA and in areas of intensive groundwater pumping.

14 Annual Report

By 30 September each year the Corporation will prepare an annual report on the enforcement and administration of the plan. The report will be given to the Minister for Water and the West Gippsland Catchment Management Authority, and will be publicly available.

If the Corporation is of the opinion that the management plan is in need of review, the annual report should contain recommendations to that effect.

If a review indicates that the management plan should be amended, the Minister for Water may amend the management plan. However, the Minister must first publish notices of the amendment, consider submissions and appoint a consultative committee to advise on the amendment.

15 Further Investigations

To better understand and manage groundwater issues in the region relevant to this plan

- the Department with funding from the National Water Commission, is providing additional groundwater monitoring to investigate and monitor interactions between the groundwater system and the Tarra River.
- more bores will be drilled near Port Welshpool to investigate and monitor seawater intrusion.

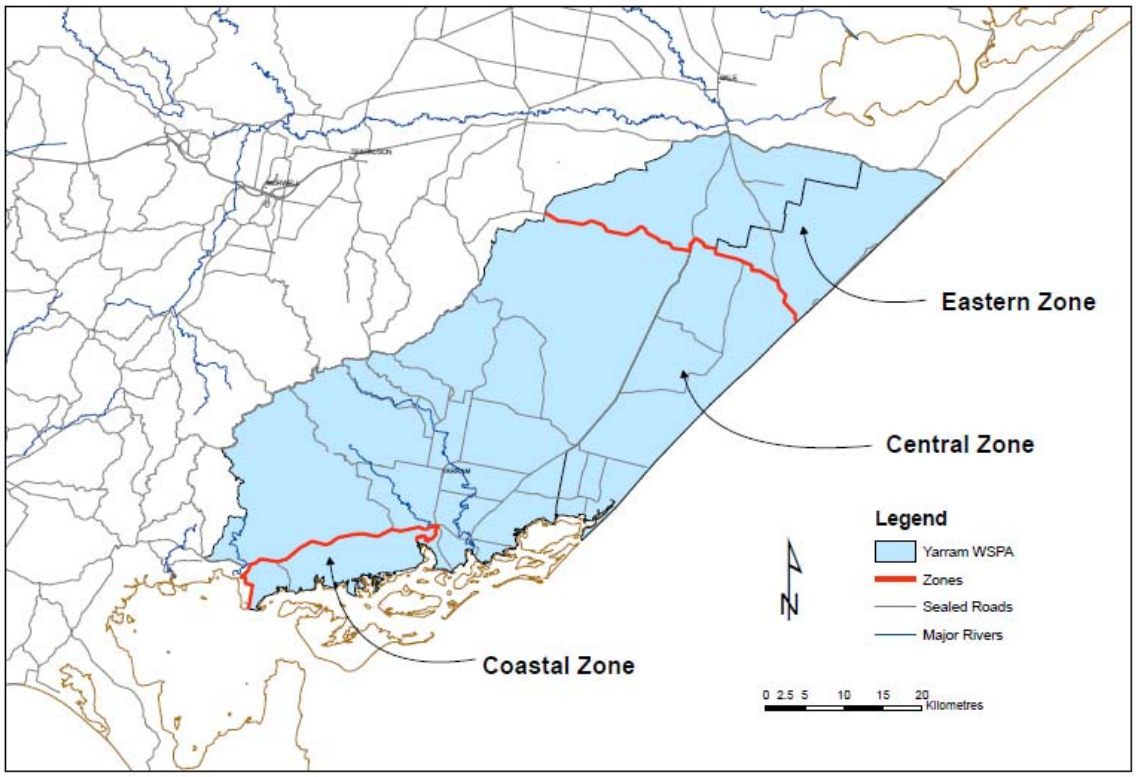
16 Technical Reference Reports

Ref	Technical issue	Report	Comment
1	Sustainability	Technical Issues Paper, Sustainability, Southern Rural Water, June 2009	Technical paper for WSPA committee**
2	WSPA Boundary	Yarram WSPA Boundary, Sinclair Knight Merz, August 2004	Technical paper for WSPA committee*
3		Yarram Boundary, Southern Rural Water, February 2008	Technical paper for WSPA committee **
4	Seawater Intrusion	Seawater Intrusion in the Yarram WSPA, Sinclair Knight Merz, August 2004	Technical paper for WSPA committee*
5	Local Interference	Local Bore Interference in the Yarram Region, Sinclair Knight Merz, March 2005	Technical paper for WSPA committee*
6		Local Bore Interference in the Yarram WSPA, Southern Rural Water, January 2006	Technical paper for WSPA committee **
7	Further allocation and Transfer Rules	Policy Options for Groundwater Allocation and Trading in the Yarram WSPA, Sinclair Knight Merz, March 2005	Technical paper for WSPA committee*
8		Allocation and Transfers in the Yarram WSPA, Southern Rural Water, February 2009	Technical paper for WSPA committee **
9	Stream interaction	Groundwater and Stream Interaction in the Yarram WSPA, Sinclair Knight Merz, October 2004	Technical paper for WSPA committee*
10		Assessment of Potential Groundwater Decline Induced Changes in the Tarra River Baseflow, Sinclair Knight Merz, March 2005	Technical paper for West Gippsland CMA
11	Subsidence	Land Subsidence in the Yarram Region, Sinclair Knight Merz, November 2004	Technical paper for WSPA committee*
12	Artificial Recharge	Artificial Recharge in the Yarram Region, Sinclair Knight Merz, September 2004	Technical paper for WSPA committee*
13	Background Paper	Background Technical Information for the Yarram Water Supply Protection Area, Sinclair Knight Merz, May 2004	Technical paper for WSPA committee*
14	Declining Levels - cause and recommendations	Falling Water Levels in the Latrobe Aquifer, Gippsland Basin, CSIRO 2004	Federal study

* These reports were provided to the previous committee.
** These reports are summaries of the considerations the previous committee used to reach decisions.

Schedule 1

Groundwater management zones



Schedule 2

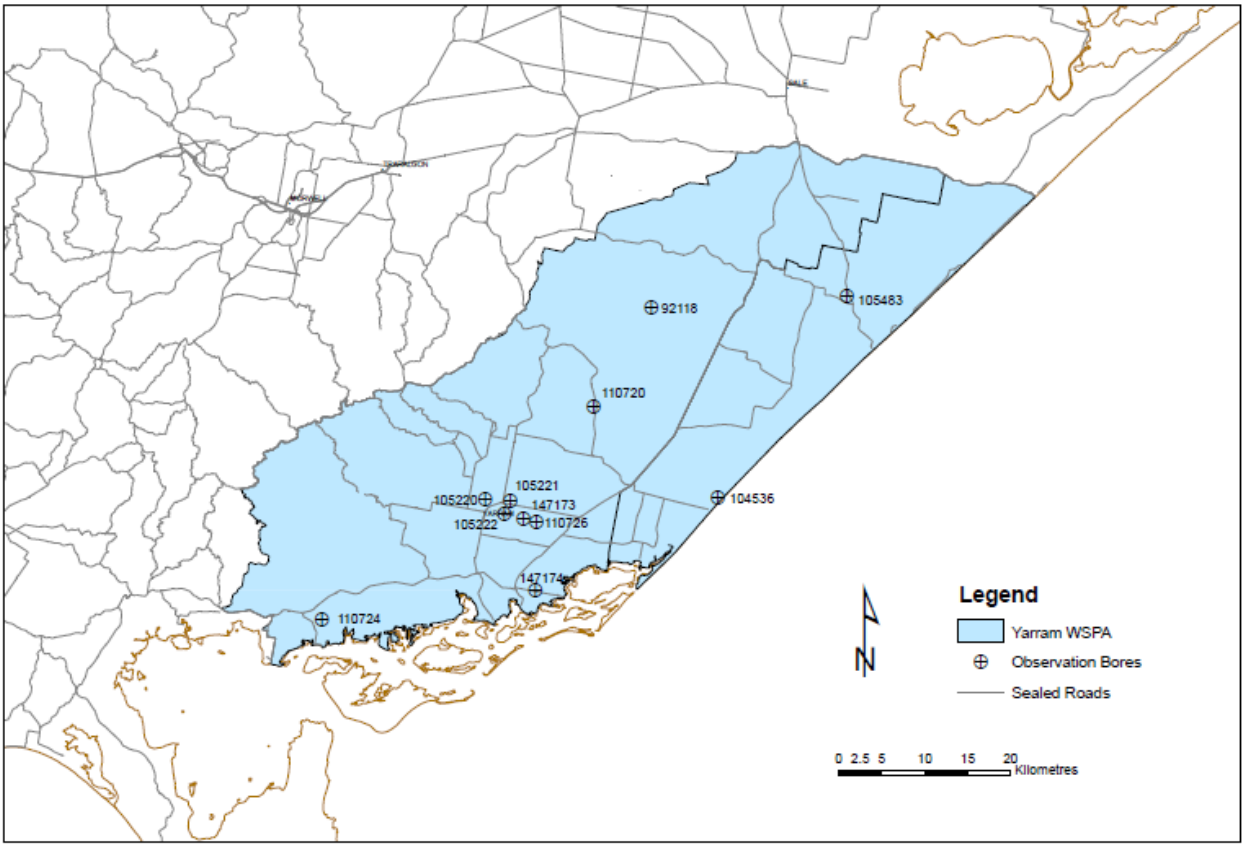
Water level monitoring bores within the Yarram WSPA

Bore Number	Reading frequency	Easting	Northing	Monitored aquifers
92118	Quarterly	490922	5756774	Latrobe Group
104536	Quarterly	499112	5734834	Latrobe Group
105220	Quarterly	472053	5734077	Latrobe Group
105221	Quarterly	475004	5733857	Latrobe Group
105222	Quarterly	474317	5732384	Balook Formation
105483	Quarterly	513662	5758634	Latrobe Group
110720	Quarterly	484462	5745034	Latrobe Group
110724[1]	Quarterly	453351	5719495	Latrobe Group
110726	Quarterly	478072	5731540	Latrobe Group
147173	Quarterly	476537	5731785	Balook Formation
147174[1]	Quarterly	478135	5723577	Balook Formation

[1] Also monitored for seawater intrusion

Schedule 3

Location of water monitoring bores within the Yarram WSPA



Schedule 4

Summary of Standard S51 Licence Conditions from State Water Register

- Water may only be taken under this licence if it is taken by the methods expressly approved by this licence.
- The licence holder must at all times provide the Corporation with safe access to inspect all works and appliances used to take water under this licence.
- Water may only be taken under this licence if it is taken at the location specified in the licence under "extraction point details".
- The volume of water taken under this licence, in any twelve-month period from 1 July to 30 June, must not exceed the licence volume, less any volume that has been temporarily transferred to another person or location.
- The maximum volume that may be taken under this licence in any one day is [insert number here] megalitres per day.
- The Corporation may determine water allocations at 1 July or during the course of the subsequent twelve-month period that are less than 100% of the licence volume, in which case the licence volume is correspondingly reduced for that twelve-month period.
- Unless otherwise directed by the Corporation, water may be taken at any time between 1 July and 30 June.
- When directed by the Corporation, water must be taken in accordance with the rosters and restrictions determined by the Corporation, and advised to the licence holder.
- Water must be taken in accordance with the rosters and restrictions as set out in the management plan, local management rules or other document that is available on the Corporation's website, and before taking water under this licence the licence holder must check the restrictions that currently apply.
- Water may only be taken under this licence if it is taken through a meter approved by the Corporation.
- Meters must be installed, in accordance with the specifications set by the Corporation, at the licence holder's expense.
- The works referred to in the licence must not be made operational until the licence holder provides the Corporation with safe access to meters for the purpose of reading, calibration or maintenance.
- The licence holder must at all times provide the Corporation with safe access to meters for the purpose of reading, calibration or maintenance.
- The licence holder must notify the Corporation within one business day if the meter ceases to function or operate properly.
- The licence holder must not, without the consent of the Corporation, interfere with, disconnect or remove any meter used for the purposes of the licence.
- Water taken under this licence may only be used on the land, and for the purposes, specified in the licence.
- The licence holder must, if required by the Corporation, monitor and record water levels in the bore(s) before and after pumping; the licence holder must also provide this information in writing as directed by the Corporation.
- The licence holder must, at the licence-holder's expense, if required by the Corporation, conduct a pumping test and obtain a hydrogeological report, to the Corporation's specification, on the potential for bore operation to interfere with any bore; aquifer, groundwater dependent ecosystem or waterway.
- The licence holder must, if required by the Corporation, provide the Corporation with the results of water quality tests on samples of water pumped from the bore.
- The licence holder must provide the Corporation with safe access to the licensed bore and works for the purposes of obtaining water level measurements, water samples and any other information or data pertaining to the operation of the bore, the works and the aquifer.
- The licence holder must, if required by the Corporation, cease taking water entirely, or cease taking water for a given period, or reduce the quantity of water taken during any period if, the Corporation reasonably believes, or in accordance with the assessment in a Groundwater Management Plan, the use or disposal of water under this licence may injure or adversely affect any other person or an aquifer or the environment.
- The licence holder must, if required by the Corporation, enter into a formal agreement to supply water to any party affected by interference from bore operation.

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