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## **BULK ENTITLEMENT (ANGLESEA GROUNDWATER) ORDER 2009**

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**SPECIAL**

**Water Act 1989****BULK ENTITLEMENT (ANGLESEA GROUNDWATER) ORDER 2009**

I, Tim Holding MP, being the Minister administering the **Water Act 1989**, make the following Order:

**PART 1 – INTRODUCTION****1 TITLE**

This Order is called the Bulk Entitlement (Anglesea Groundwater) Order 2009.

**2 AUTHORISING PROVISION**

This Order is made under section 42 of the **Water Act 1989**.

**3 COMMENCEMENT**

This Order comes into operation on 1 July 2009.

**4 PURPOSE**

The purpose of this Order is to authorise Barwon Water to take groundwater from the Lower Eastern View Formation for the purpose of augmenting the Greater Geelong water supply system and to establish the terms and conditions of that taking.

**5 DEFINITIONS**

## 5.1 In this Order:

‘**Act**’ means the **Water Act 1989**;

‘**Area**’ means the Jan Juc Groundwater Management Area as defined by plan LEGL./09–252 lodged in the Central Plan Office;

‘**Barwon Water**’ means Barwon Region Water Corporation;

‘**Eastern View Group**’ means the stratigraphic unit as described in the Australian Stratigraphic Units Database;

‘**existing groundwater user**’ means any person authorised under the Act, at the commencement of this Order, to take and use water from the Lower Eastern View Formation or the Upper Eastern View Formation;

‘**groundwater dependent ecosystems**’ means ecosystems which are dependent upon groundwater in the Eastern View Formation;

‘**Lower Eastern View Formation**’ means the basal member of the Eastern View Group which was formed in the Palaeocene Period (Lygistepollenites balmei Zone), which consists of micaceous silts, carbonaceous clays, brown coal and fine to coarse grained sands and gravels and which overlies the Otway Group, the stratigraphic unit as described in the Australian Stratigraphic Units Database;

‘**Middle Eastern View Formation**’ means the member of the Eastern View Group which was formed in the Palaeocene Period (Upper Lygistepollenites balmei Zone), which consists of shale and mudstone and which separates the Lower Eastern View Formation from the Upper Eastern View Formation;

‘**monitoring and assessment program**’ means a program prepared by Barwon Water for the purpose of providing data and information about the long term sustainability of groundwater resources in the Area and protecting the environmental values and health of groundwater dependent ecosystems;

‘**observation bore**’ means an observation bore listed in Table B of Schedule 1 of this Order or specified by the Minister by notice as provided for in clause 5.2;

‘**the Minister**’ means the Minister administering the Act or, in relation to any provision, any person authorised by the Minister to act on the Minister’s behalf in relation to that provision or to whom the Minister has delegated the relevant power, discretion, function, authority or duty under the Act ;

**‘this Order’** means the Bulk Entitlement (Anglesea Groundwater) Order 2009;

**‘the Resource Manager’** means a person or an Authority appointed by the Minister under section 43A of the Act or, in relation to any provision, any person authorised by the Minister to act on the Minister’s behalf in relation to that provision or to whom the Minister has delegated the relevant power, discretion, function, authority or duty under the Act to be the Resource Manager for the purposes of this Order;

**‘trigger level’** means, in relation to an observation bore, a groundwater level,

- (a) determined in the manner specified in Schedule 2 of this Order; or
- (b) if the Minister has published a notice in the Government Gazette as provided for in clauses 5.2 or 5.3, specified or determined in the manner specified in that notice,

for the purpose of ensuring that the taking of groundwater under this Order does not materially and adversely affect the environmental values and health of groundwater dependent ecosystems;

**‘Upper Eastern View Formation’** means the member of the Eastern View Group which was formed in the Early Eocene Period (Lower to Upper Malvacipollis diversus Zones), which consists of clay, silty clay, silt to fine, medium grained sand sequences with minor fine gravel lenses and brown coal seams in the top of the sequence and which overlies the Middle Eastern View Formation.

- 5.2 For the purpose of ensuring that the taking of groundwater under this Order does not materially and adversely affect the environmental values and health of groundwater dependent ecosystems, the Minister may specify, by notice published in the Government Gazette, an additional observation bore and specify a trigger level or manner for determining a trigger level for that bore.
- 5.3 The Minister may specify, by notice published in the Government Gazette, a different trigger level or manner of determining a trigger level for an observation bore if of the opinion that:
  - (a) the trigger level is not adequate for ensuring that the taking of groundwater under this Order does not materially and adversely affect the environmental values and health of groundwater dependent ecosystems; or
  - (b) more accurate or reliable data has become available for specifying or determining a trigger level to ensure that the taking of groundwater under this Order does not materially and adversely affect the environmental values and health of groundwater dependent ecosystems.
- 5.4 Before publishing a notice under clauses 5.2 or 5.3, the Minister will consult with Barwon Water and the Minister administering Part 4 of the **Catchment and Land Protection Act 1994**.

## **PART 2 – BULK ENTITLEMENT**

### **6 BULK ENTITLEMENT**

- 6.1 Subject to the terms of this Order, Barwon Water is authorised to take and use groundwater from the Lower Eastern View Formation up to the following amounts in the following periods:
  - (a) 40ML in any day;
  - (b) 10,000ML in any year; and
  - (c) 35,000ML in any five year period, for the purposes of supplying water to its customers in the Greater Geelong area.
- 6.2 Groundwater may only be taken from an extraction bore described in the Schedule to this Order and from any additional bore which is:
  - (a) licensed under section 69 of the Act; and
  - (b) located in the area between latitude 38° 20S and the coast and between longitude 144° 8’ E and longitude 144° 12’ E.

**PART 3 – GENERAL CONDITIONS****7 OBLIGATIONS TO OTHER GROUNDWATER USERS**

- 7.1 If Barwon Water is advised by an existing groundwater user that the taking of groundwater under this Order is materially and adversely affecting that person's authorised use of groundwater under the Act, Barwon Water must notify the Resource Manager immediately.
- 7.2 If the taking of groundwater under this Order materially and adversely affects an existing groundwater user's use of groundwater under the Act as authorised at the commencement of the Order, Barwon Water must carry out any arrangements agreed between Barwon Water and the user or, in the event of the parties being unable to agree, determined as provided for in this clause.
- 7.3 Any arrangements agreed to or determined as provided for in this clause, may include the provision of an alternative water supply at the cost of Barwon Water or the making of financial payments by Barwon Water.
- 7.4 In the event that Barwon Water and an existing groundwater user cannot agree on:
- (a) whether there is a material or adverse affect on an authorised use, as provided for in clause 7.2; or
  - (b) the arrangements to be entered into,
- either may give written notice to the other requiring the matter to be determined by an independent person as provided for in clause 18.

**8 OBLIGATION TO PROTECT GROUNDWATER DEPENDENT ECOSYSTEMS**

- 8.1 Barwon Water must ensure that the taking of groundwater under this Order does not materially and adversely affect the environmental values and health of groundwater dependent ecosystems.
- 8.2 Barwon Water must notify the Resource Manager immediately it becomes aware that the taking of groundwater under this Order is materially and adversely affecting the environmental values and health of groundwater dependent ecosystems or of the likelihood of that happening.

**9 TRIGGER LEVELS**

- 9.1 Barwon Water must immediately notify the Resource Manager when any groundwater level in an observation bore falls below a trigger level.
- 9.2 If the average of the daily groundwater levels in an observation bore over a 30 day period is below the trigger level, Barwon Water must immediately:
- (a) notify the Resource Manager and the Minister; and
  - (b) take such action as required, including reducing the amount of groundwater taken under this Order or ceasing to take any groundwater under this Order, to restore the groundwater level to above the trigger level within a further 30 day period.
- 9.3 If the groundwater levels have not been restored to above the trigger level at the end of the 30 day period specified in clause 9.2(b), Barwon Water must take any further action directed by the Minister, by notice in writing, and in the time and manner specified in the notice.
- 9.4 Barwon Water must provide the Resource Manager or the Minister, as the case may be, with any data or information required by the Minister or Resource Manager, by notice in writing, relating to groundwater levels or actions taken or to be taken under this clause and in the time and manner specified in the notice.

**10 METERING OBLIGATIONS**

- 10.1 Barwon Water must ensure:
- (a) the accurate and timely measurement and recording of:
    - (i) all groundwater taken under this Order; and
    - (ii) groundwater levels in an observation bore,

- (b) metering equipment and associated structures are kept in good condition and regularly inspected;
  - (c) if found to be defective, metering equipment is recalibrated or replaced as soon as practicable; and
  - (d) a record is kept of all inspections, maintenance work or recalibrations of metering equipment or associated structures.
- 10.2 Barwon Water must propose a metering program to the Minister, within one month of the commencement of the Order, in accordance with any guidelines issued by the Minister, for the purpose of assessing whether or not Barwon Water is complying with the relevant terms and conditions of this Order.
- 10.4 Barwon Water must implement any metering program approved by the Minister.

## **11 TRANSFERS**

Barwon Water must not transfer in whole or in part the entitlement granted under this Order.

## **PART 4 – RESOURCE ASSESSMENT**

### **12 REVIEWS**

- 12.1 Barwon Water must undertake a program of reviews in accordance with the requirements of this clause, to inform the Minister about:
- (a) the long term sustainability of groundwater resources in the Area;
  - (b) protecting the environmental values and health of groundwater dependent ecosystems; and
  - (c) improving resource management arrangements under this Order.
- 12.2 A review must address the following in respect of the period under review:
- (a) identify the impacts of taking groundwater and the likely impacts of future takings under this Order on groundwater, surface water and existing groundwater users;
  - (b) identify the impacts of taking groundwater and the likely impacts of future takings under this Order on the environmental values and health of groundwater dependent ecosystems;
  - (c) document the key results of any investigations and new understanding about groundwater resources and the connectivity of groundwater to surface water ecosystems in the Area;
  - (d) review the groundwater model for the Area and identify any significant variations from previous predictions;
  - (e) assess the effectiveness of the arrangements specified in clause 9, including the effectiveness of the trigger levels in protecting the environmental values and health of groundwater dependent ecosystems;
  - (f) assess the effectiveness of the monitoring and assessment program approved under clause 13;
  - (g) include any recommendations which in the opinion of Barwon Water are relevant to the purposes of the review described in clause 12.1; and
  - (h) include any additional information or assessment required by the Minister or recommendations in relation to matters specified by the Minister.
- 12.3 Barwon Water must consult with interested government agencies on the process for the review and any additional matters to be included in the review.
- 12.4 At least twelve months before a review is to be completed Barwon Water must seek approval from the Minister of the process for the review and any additional matters to be included in the review.

- 12.5 Barwon Water must provide a report to the Minister on the results of the first review by 31 December 2012 and thereafter at five yearly intervals.
- 12.6 If the review identifies any deficiencies in the Order in relation to:
- (a) any material and adverse impacts on existing users or the environmental values or health of groundwater dependent ecosystems; or
  - (b) any decline in the long term sustainability of groundwater resources in the Area, as a result of taking groundwater under this Order, Barwon Water must make an application to the Minister under section 44 or section 45 of the Act to amend this Order to address those impacts or to maintain the long-term sustainability of the resource.

### 13 MONITORING AND ASSESSMENT PROGRAM

- 13.1 Barwon Water must not take any groundwater under this Order unless it has in place a monitoring and assessment program approved by the Minister.
- 13.2 Barwon Water must implement a monitoring and assessment program approved by the Minister.
- 13.3 At the request of the Minister or Resource Manager, by notice in writing, Barwon Water must provide the Minister or Resource Manager, as the case may be, with any information or data relating to the monitoring and assessment program in the manner and within the period specified in the notice.
- 13.4 Within three months of the completion of and having regard to the findings of a review, Barwon Water must propose a revised monitoring and assessment program to the Minister.

## PART 5 – ACCOUNTABILITY AND GOVERNANCE

### 14 PROGRAMS

- 14.1 In Part 5 of this Order:

‘a program’ means:

- (a) a metering program as provided for in clause 10; and
- (b) a monitoring and assessment program as provided for in clause 13.

‘an approved program’ means a program approved by the Minister.

‘a proposed program’ means a program or a proposed revised program submitted to the Minister for approval.

- 14.2 Barwon Water:
- (a) may at any time review a program; or
  - (b) must review a program if so requested by the Minister, by notice in writing, and, in accordance with any guidelines issued from time to time by the Minister, propose a revised program to the Minister.
- 14.3 The Minister may:
- (a) refuse to approve a proposed program;
  - (b) approve a program; or
  - (c) approve a program subject to conditions, in which case the conditions form part of the approved program.
- 14.4 Barwon Water must provide a copy of an approved program to the Resource Manager as soon as reasonably practicable after the Minister has approved the program or revised program, as the case may be.

### 15 INDEPENDENT AUDIT

- 15.1 If so requested by the Minister, by notice in writing, Barwon Water must arrange for an independent audit of any activity, program or review undertaken by Barwon Water under this Order, within the time and in the manner specified in the notice.

- 15.2 An independent audit of a review carried out under clause 12 must determine:
- (a) whether or not any conclusions reached in the review are supported by the methodology or data used in the review;
  - (b) whether or not the data used in the review was the best available data; and
  - (c) any other matter specified by the Minister.
- 15.3 Barwon Water must provide a copy of the report of any independent audit to the Minister and the Resource Manager.

## **16 REPORTING REQUIREMENTS**

- 16.1 Barwon Water must include in its annual report, the following information in respect of the relevant 12 month period:
- (a) the annual amount of groundwater taken under this Order;
  - (b) any amendment to this Order; and
  - (c) any failure by Barwon Water to comply with this Order.
- 16.2 Barwon Water must prepare an annual report, to be called an Annual Bulk Entitlement Report (Anglesea Groundwater) which includes the following information in respect of the relevant 12 month period:
- (a) the daily amount of groundwater taken under this Order;
  - (b) the monthly amount of groundwater taken under this Order;
  - (c) the annual amount of groundwater taken under this Order and from each bore;
  - (d) the results of the water quality sampling carried out under the monitoring and assessment program;
  - (e) any period or periods of greater than 30 days during which the average of the daily groundwater levels in an observation bore was below a trigger level as provided for in clause 9;
  - (f) any issues or difficulties experienced or anticipated by Barwon Water in implementing an approved program or restoring groundwater levels as provided for in clause 9;
  - (g) any arrangements entered into with an existing groundwater user under clause 7;
  - (h) the results of any independent arbitration under clause 18 to which Barwon Water is a party; and
  - (i) any difficulties experienced or anticipated by Barwon Water in complying with this Order and any remedial action taken or proposed by it.
- 16.3 Barwon Water must provide a copy of the Annual Bulk Entitlement Report (Anglesea Groundwater) to the Resource Manager at such time Barwon Water provides a copy of the annual report to the Minister.
- 16.4 At the request of the Minister or Resource Manager, by notice in writing, Barwon Water must report to the Minister or Resource Manager, as the case may be, on any matter listed in clauses 16.1 and 16.2 and specified in the notice:
- (a) in writing or in such electronic form as agreed between Barwon Water and the Minister or the Resource Manager, as the case may be; and
  - (b) within 14 days of receiving the notice or within such longer period as either may determine.

## **17 PUBLIC ACCESS TO INFORMATION**

- 17.1 Barwon Water must make available to members of the public, free of charge, copies of
- (a) an approved program;
  - (b) the report of a review carried out under clause 12;
  - (c) the report of an independent audit under clause 15;
  - (d) the Annual Bulk Entitlement Report (Anglesea Groundwater) prepared under clause 16.2.

- 17.2 Barwon Water must also make available, on a regular basis, free of charge and in a summary form, the information referred to in paragraphs (a) – (d) of clause 16.2 and information relating to actions taken by it under clause 9.
- 17.3 Barwon Water must make available to any person on request, subject to the person paying a fair and reasonable access fee imposed by Barwon Water to cover the cost of meeting that request, any data collected in the course of implementing a program.

## **18 DISPUTE RESOLUTION**

- 18.1 If a dispute arises between:
- (a) Barwon Water, the Resource Manager, the Minister or any of them concerning the interpretation or application of this Order; or
  - (b) Barwon Water and an existing groundwater user as provided for in clause 7,
- and the dispute is not resolved within fourteen days of it arising, any party to the dispute may give written notice to the other party requiring that the matter be determined by an independent person in accordance with this clause.
- 18.2 The independent person may only commence to determine the matter a further fourteen days after the giving of that notice.
- 18.3 The independent person will be either:
- (a) a person agreed to by the parties to the dispute; or
  - (b) if the parties cannot agree, a person nominated by the President of the Institute of Arbitrators and Mediators, Australia.
- 18.5 The independent person must try to reach a conclusion on the matter within thirty days of it being referred to that person, but has power to extend the period for reaching a conclusion on the matter by a further thirty days or such longer period which is agreed to by the parties.
- 18.6 The independent person must send a copy of the conclusion and supporting reasons to each party to the dispute.
- 18.7 Any conclusion by the independent person is final and binding on the parties except in a dispute:
- (a) to which the Minister is a party, in which case the independent person must express the conclusion as a recommendation; or
  - (b) to which an existing groundwater user is a party in which case any conclusion by the independent person is only final and binding on the existing groundwater user if that party agrees that the conclusion will be final and binding.
- 18.8 In any dispute to which the Minister is a party, the Minister must consider any conclusion made under clause 18.7(a) before giving a direction under section 307 of the Act or taking any other actions under the Act in relation to the dispute.
- 18.9 The apportionment of the costs of and incidental to every reference, including the costs of the independent person:
- (a) in the case of a dispute involving an existing groundwater user, shall be at the discretion of the independent person;
  - (b) in any other case, shall be at the discretion of the Minister.

## **19 DATA**

The Minister will use the Minister's best endeavours to ensure that all hydrological and other data available to the Minister and required by Barwon Water to comply with this Order is made available to Barwon Water.

## **20 ROLE OF RESOURCE MANAGER**

- 20.1 In addition to any other obligations imposed on the Resource Manager by this Order, the Resource Manager is responsible for monitoring Barwon Water's compliance with this Order.



20.2 Barwon Water must pay any costs reasonably incurred by the Resource Manager in carrying out any obligations imposed on the Resource Manager under this Order.

20.3 Any amount payable by Barwon Water under this clause must be paid in arrears, within 28 days of Barwon Water receiving an invoice, unless the parties agree otherwise.

Dated 29 June 2009

TIM HOLDING MP  
Minister for Water

### SCHEDULE 1

In this Schedule –

- (a) ‘**Easting**’ means the Australian map grid reference coordinate in the standard Geodetic Datum of Australia 94;
- (b) ‘**Northing**’ means Australian map grid reference coordinate in the standard Geodetic Datum of Australia 94.

**TABLE A Groundwater Extraction Bores<sup>1</sup>**

Identification Number	Easting	Northing
SPB1	252563	5745972
SPB3	253556	5746028
SPB4	254274	5746472
NPB6	254480	5751261
NPB7	252560	5752162

**TABLE B Groundwater Observation Bores<sup>2</sup> for measuring groundwater levels for the purposes of clause 9**

Identification Number	Easting	Northing
116460	246176	5744536
113470	246773	5748506
119347	249492	5751501

**Notes:**

1. New extraction bores can be established, as provided in clause 6.
2. Additional observation bores can be required as provided for in clause 5.

### SCHEDULE 2 – TRIGGER LEVELS

**General**

1. In this Schedule
  - ‘**A**’ is the figure specified in column 2 of Table A, being the predicted drawdown in the relevant observation bore at which the predicted drawdown at a selected location is greater than 0.1m;
  - ‘**B**’ is the figure calculated in the manner specified below, being an allowance for climate variability;
  - ‘**m**’ means metres;
  - ‘**starting groundwater level**’ is the mean daily groundwater level (meters AHD) in the relevant observation bore over the thirty days before the first day on which groundwater is taken under this Order.
  - ‘**Year**’ means a twelve month period commencing the first day of the month pumping commenced under this order.

2. For the purposes of this Order, a trigger level (meters AHD) for a particular observation bore and in respect of a particular year, is determined at the start of the year by subtracting the sum of A and B from the starting groundwater level (meters AHD).

**Table A: Calculation of Trigger Levels for an Observation Bore – ‘A’**

Observation Bore (ID)	A (Predicted drawdown)
119347	5.5m
116460	4.8m
113470	3.7m

**Determining Climate Variability – ‘B’: Observation Bore 119347**

3. In respect of observation bore ID 119347:
- for the first six years from the commencement of this Order, ‘B’ equals 0.4 m;
  - for any subsequent year, ‘B’ is calculated by determining the cumulative deviation from the mean monthly rainfall in respect of Year 6 and multiplying that figure by negative (-)0.001044 and rounding to the nearest 0.1 m.
4. For the purposes of clause 3, the cumulative deviation from the mean monthly rainfall for a calendar month is the actual rainfall for the month, as recorded at the Anglesea Rainfall Station, minus the average rainfall for the month as set out in Table B plus the cumulative variation from the mean for the previous month. The cumulative rainfall total commences from 0 mm on 01 October, 2008.
5. For the purposes of clause 3, Year 6 is the year that is 6 years before the year in which the trigger level is to apply.

**Table B: Monthly Rainfall Averages, Anglesea Rainfall Station (01/02/1950 to 01/10/2008)**

Month	mm	Month	mm
Jan	36	July	66
Feb	46	Aug	72
Mar	38	Sept	65
Apr	54	Oct	65
May	63	Nov	56
Jun	55	Dec	45

**Determining Climate Variability – ‘B’: Observation Bore 116460**

6. In respect of observation bore ID 116460, ‘B’ is calculated by determining the cumulative deviation from the mean monthly rainfall in respect of the previous year and multiplying that figure by negative (-)0.001679. and rounding to the nearest 0.1m.
7. For the purposes of clause 6, the cumulative deviation from the mean monthly rainfall for a calendar month is the actual rainfall for the month, as recorded at the Anglesea Rainfall Station, minus the average rainfall for the month as set out in Table B plus the cumulative variation from the mean for the previous month. The cumulative rainfall total commences from 0 mm on 01 October, 2008.

**Determining Climate Variability – ‘B’: Observation Bore 113470**

8. In respect of observation bore ID 113470, ‘B’ is calculated by determining the cumulative deviation from the mean monthly rainfall in respect of the previous year and multiplying that figure by negative (-)0.0046 and rounding to the nearest 0.1m.

9. For the purposes of clause 8, the cumulative deviation from the mean monthly rainfall for a calendar month is the actual rainfall for the month, as recorded at the Eastern View Rainfall Station, minus the average rainfall for the month as set out in Table C plus the cumulative variation from the mean for the previous month. The cumulative rainfall total commences from 0 mm on 01 October, 2008.

**Table C: Monthly Averages, Eastern View Rainfall Station (01/01/1950 to 01/10/2008)**

<b>Month</b>	<b>mm</b>	<b>Month</b>	<b>mm</b>
Jan	35	July	81
Feb	44	Aug	86
Mar	41	Sept	79
Apr	61	Oct	75
May	72	Nov	63
Jun	68	Dec	49

## BULK ENTITLEMENT (ANGLESEA GROUNDWATER) ORDER 2009

## Explanatory Note to Accompany Entitlement Order

This note has been prepared to explain the Order granting an entitlement to Barwon Water to take groundwater from the Lower Eastern View Formation.

**Introduction**

The Central Region Sustainable Water Strategy (October 2006) foreshadowed the use of groundwater from the Eastern View Formation (EVF) to augment water supplies for the Greater Geelong Area. The projected short and long term demand for water in the area exceeds existing supplies.

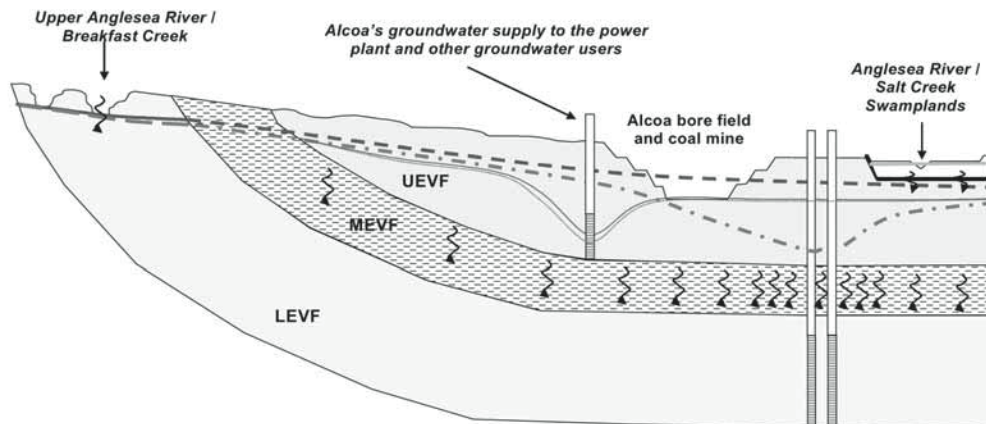
All extractions of groundwater must be authorised under the **Water Act 1989** (the Act) and the relevant authorisation for a water corporation is a bulk entitlement granted under Part 4.

Barwon Water submitted an application to the Minister for Water in October 2008 for a bulk entitlement to extract an average of 7,000 million litres (ML) a year from the Lower Eastern View Formation (LEVF). In considering an application for a bulk entitlement the Minister must consider the range of matters spelt out in section 40, including any potential adverse effects extraction may have on the aquifer, the environment and other water users. The Minister can refuse an application or grant the entitlement by an Order, which may include terms and conditions.

The Minister has made the Bulk Entitlement (Anglesea Groundwater) Order 2009 (the Order) which authorises Barwon Water to take groundwater from the LEVF on the terms and conditions set out in the Order and described in this Explanatory Note.

**Overview of the aquifer**

The LEVF, also known as the Jan Juc deep aquifer, is one of three geological layers making up the EVF. It is up to 250 metres thick, extends from the upper Otway ranges to the coast. It is recharged by rainfall in the upper Otway ranges. Groundwater flows towards the coast and ultimately discharges offshore.



Concept diagram only. Features are not to scale, but emphasised to illustrate key concepts.

The most significant existing groundwater user in the area is Alcoa which has a licence under the Act to extract up to 4,000 ML a year from the Upper Eastern View Formation (UEVF) for electricity generation. It also extracts water for mine dewatering. Licences have been granted to extract a further 250 ML a year from the LEVF and there are no licensed extractions from the Middle Eastern View Formation.

The EVF is in an area which contains ecosystems of environmental significance associated with:

- the Anglesea estuary;
- swamplands in the lower parts of the catchments of the Anglesea River and Salt Creek that includes riparian scrub and aquatic sedgelands, supporting swamp antechinus and swamp skink;
- the upper Anglesea River that comprises sedgy riparian woodland and aquatic herbfields that are likely to support long-nosed potoroo, swamp skink, swamp antechinus and white footed dunnart; and
- Breakfast Creek (a tributary of Salt Creek) that contains an isolated and potentially unique population of southern pygmy perch.

Barwon Water will extract groundwater from two borefields. One is located north of Anglesea and the second north-west of Anglesea.

#### **Impacts of the extraction on groundwater dependent ecosystems**

Prior to making its application, Barwon Water undertook a Project Impact Assessment of the Anglesea Borefield Project (Impact Assessment) which examined the effects of extracting an average of 7000ML a year on other groundwater users, surface water ecosystems and groundwater quality. A numerical groundwater model was developed to represent flow in the UEVF and LEVF aquifers.

The Project Impact Assessment concluded that in the first five years of extraction there would be no impacts on the surface water systems in the lower catchments of Salt Creek and the Anglesea River and negligible impacts in the upper catchments.

An independent review of the Project Impact Assessment was carried out which concluded that its findings were reasonable based on currently available data. However the Panel also observed that the groundwater model was not adequate to reliably predict long-term impacts and that more reliable and defensible predictions could only be made by obtaining additional monitoring data and undertaking further studies after pumping had started.

The Minister for Planning determined that the Anglesea Borefield Project did not require an Environmental Effects Statement provided certain conditions were met. One of these conditions was that before groundwater extraction began, an independent expert review of the proposed regime for monitoring the potential hydrological impacts of extraction and the performance criteria included in the Order to ensure extraction rates are sustainable and the risk of adverse ecological effects are minimised. This review has been carried out and its recommendations incorporated in the bulk entitlement order and monitoring assessment program approved by the Minister.

Part 3 of the Order contains general conditions to protect existing groundwater users and groundwater dependent ecosystems and Part 4 contains requirements to ensure additional research and monitoring is carried out which will form the basis of a program of reviews of the management arrangements put in place by the Order. Groundwater water dependent ecosystems in the upper catchments are further protected by the inclusion of triggers, the role of which is described in more detail below. The Order seeks to provide Barwon Water with operational flexibility while ensuring key environmental assets and existing users are protected.

#### **Roles and Responsibilities**

The Minister for Water (the Minister) is responsible for managing Victoria's water resources, and has a number of specific obligations under the Order. The Minister is also responsible for making changes to the Order – either by making an amending Order under section 44 of the Act or by notice, in the case of a minor variation, under section 45.

The Order places obligations on the Resource Manager, whose key role is to monitor compliance with the conditions of the Order. The Minister has appointed the Secretary of the Department of Sustainability and Environment to be the Resource Manager.

**NOTES ON PARTICULAR CLAUSES OF THE BULK ENTITLEMENT****PART 1 – INTRODUCTION**

Clauses 1 to 5 deal with a range of preliminary matters, including the title of the Order, the authorising provision, the commencement date, a short statement of the purpose of the Order and the definition of terms used in the Order.

Clause 5 contains a definition of the term ‘trigger level’. A trigger level is the groundwater level in an observation bore and if that level is reached the management arrangements spelt out in clause 9 apply. The term is defined to mean the groundwater level determined in accordance with Schedule 2 or by a notice published by the Minister. If the Minister considers that the existing trigger levels are not adequate to protect groundwater dependent ecosystems or more reliable and accurate data has become available a different trigger level or manner of calculating the trigger level can be specified by the Minister.

Provision is also made for the Minister to specify an additional observation bore and trigger level for that bore to protect groundwater dependent ecosystems.

**PART 2 – BULK ENTITLEMENT****Bulk Entitlement (clause 6)**

Barwon Water is entitled to extract up to 35,000 ML of water from the LEVF over any five year period – provided no more than 10,000 ML is taken in any year or more than 40 ML is taken in any day.

This provides Barwon Water with some flexibility to manage peak demand and interruptions in supply.

The amounts of water able to be extracted are further subject to the arrangements for protecting existing groundwater users (clauses 7) and groundwater dependent ecosystems (clauses 8 and 9) and will be periodically reviewed.

**PART 3 – GENERAL CONDITIONS****Obligations to other groundwater users (clause 7)**

As noted, with the exception of Alcoa, there are few existing groundwater users in the area. If existing users are materially and adversely affected Barwon Water is required to implement any arrangements agreed between Barwon Water and the user. These arrangements could include modifications to the operation of the borefield to restore supply, the provision of an alternate supply or financial payment. If the parties cannot agree there is provision for the matter to be referred to independent arbitration. The decision of the independent person would be binding on Barwon Water and, by agreement, on the aggrieved user.

**Obligation to protect dependent surface water ecosystems (clause 8)**

Clause 8 places a general obligation on Barwon Water to ensure that the extraction of groundwater under the Order does not materially and adversely affect groundwater dependent ecosystems. It is also required to notify the Resource Manager immediately it becomes aware that the rate of its extraction is or may materially affect the environmental values or health of groundwater dependent ecosystems.

**Trigger Levels (clause 9)**

Clause 9 contains a management regime for taking further action if the groundwater levels in an observation bore fall below specified trigger levels, averaged over a thirty day period.

The trigger levels set at the commencement of the Order are designed to protect ecosystems associated with the upper catchments of the Anglesea River and Salt Creek (Breakfast Creek and tributaries), including a system of perennial pools containing a species of pygmy perch. As noted, clause 5 provides for the Minister to specify new trigger levels if additional technical data obtained after pumping has commenced indicates that the current trigger levels are not meeting their objective or more accurate or reliable data has become available for specifying or determining a trigger level to ensure that the taking of groundwater under this Order does not materially and adversely affect the environmental values and health of groundwater dependent ecosystems.

If a trigger level is reached Barwon Water must immediately take action to restore the groundwater level to above the trigger level within thirty days, including reducing the amount of water being taken or ceasing pumping. If the groundwater level has not been restored the Minister can direct Barwon Water to take further action.

Provision is made in clause 5 to include additional monitoring bores and trigger levels. This enables the Minister to extend the management regime in clause 9 to protect other groundwater dependent ecosystems, such as the swamplands in the lower parts of the Anglesea River or Salt Creek.

#### **Metering Obligations (clause 10)**

Clause 10 places specific obligations on Barwon Water to measure and record groundwater taken under the Order and groundwater levels in observation bores. Barwon Water must also implement a metering program approved by the Minister to ensure the Minister is provided with the information specified in the Order and at the times and manner specified in the Order. The metering program will include, for example, the frequency of data collection. The metering program must be publicly available (see clause 17).

#### **Transfers (clause 11)**

Clause 11 prohibits Barwon Water from transferring its bulk entitlement.

### **PART 4 – RESOURCE ASSESSMENT**

#### **Reviews (clause 12)**

Barwon Water is required to undertake a program of reviews at intervals no greater than five years with the first review to be completed by 31 December 2012. The reviews will provide the information to ensure the long-term sustainability of the resource and protect the environmental values and health of groundwater dependent ecosystems and existing users. A rolling cycle of reviews which may result in changes to the Order and new trigger levels ensures adaptive management of groundwater resources in the area

A review must address the matters specified and amongst other things must:

- identify the impacts of taking groundwater under this Order on groundwater in the area, surface water systems and other users and the likely impacts of future takings;
- document the key results of any investigations and new understanding about groundwater resources in the Area during the period under review;
- review the groundwater model for the Area and identify any significant variations from previous predictions;
- assess the effectiveness of the triggers and arrangements in clause 9;
- assess the effectiveness of the monitoring and assessment program; and
- include any recommendations for better managing the resource.

If the review identifies any material and adverse impacts from pumping on the groundwater dependent ecosystems or other users or any decline in the long term availability of groundwater, Barwon Water must recommend changes to the Order to address those impacts or maintain the long term availability of the resource.

Barwon Water must consult with other agencies and obtain the Minister's approval to the process, timetable and scope of the review. The results of the review will be made available to the public (see clause 17).

#### **Monitoring and Assessment Program (clause 13)**

Barwon Water is required to undertake a monitoring and assessment program, approved by the Minister, to provide data and information about the long term sustainability of groundwater resources in the Area and protecting the environmental values or health of groundwater dependent ecosystems.

In particular, the program required for the first review will aim to:

- establish the processes that maintain the perennial pools in the upper catchments and further evaluate the environmental significance of those pools ;
- confirm the processes that maintain the Anglesea River and Salt Creek Swamplands, and assess any impacts of pumping;
- further evaluate the characteristics of the LEVF and enable the groundwater model to be improved; and
- evaluate any leakage from the UEVF to the LEVF as a result of pumping, and any associated impacts on the Salt Creek swamplands.

The monitoring and assessment program can be reviewed at any time by Barwon Water or at the request of the Minister and the approved program must be made publicly available (see clause 17).

## **PART 5 – ACCOUNTABILITY AND GOVERNANCE**

### **Programs (clause 14)**

Clause 14 deals with some common matters relating to metering programs and monitoring and assessment programs required by the Order.

### **Independent Audit (clause 15)**

The Minister has the ability to require Barwon Water to arrange for an independent audit to be undertaken of any activity, program or review undertaken by Barwon Water under this Order. Certain matters that an audit must address are specified. Any findings of an audit must be made public (see clause 17).

### **Reporting Requirements (clause 16)**

This clause sets out Barwon Water's annual reporting requirements on matters relating to the operation of the Order and its obligations to provide reports and information requested by the Minister or the Resource Manager.

In addition to certain matters to be included in its general Annual Report, Barwon Water must prepare a further detailed report to be called an Annual Bulk Entitlement Report (Anglesea Groundwater). The latter must include such information as the daily, monthly and annual amounts of water taken under the Order and the periods in which groundwater levels in observation bores remained below trigger levels and the remedial action taken and difficulties experienced or anticipated in complying with the Order or implementing a program.

### **Public Access to information (clause 17)**

This clause requires Barwon Water to make a range of reports and information available to the public free of charge.

In addition to preparing an Annual Bulk Entitlement Report (Anglesea Groundwater), Barwon Water must provide certain information to be included in that report available on a more regular basis, free of charge.

Barwon Water is also required to make available any data collected under its metering program, monitoring and assessment program. Barwon Water can charge an access fee to recover its costs of making the information available.

### **Dispute Resolution (clause 18)**

Provision is made for disputes and differences between Barwon Water and the Minister and/ or the Resource Manager or between Barwon Water and an existing groundwater user to be referred for independent arbitration. Any findings of the independent person are binding on Barwon Water.

### **Data (clause 19)**

This clause ensures that Barwon Water can access hydrological data collected by the Department of Environment and Sustainability.



**Resource Manager (clause 20)**

This clause sets out additional responsibilities of the Resource Manager and requires Barwon Water to meet the reasonable costs of the Resource Manager in carrying out its responsibilities under the Order. These include monitoring compliance with bulk entitlement.

**Schedule 1 (Location of Bores)**

**Table A** sets out the location of groundwater extraction bores.

**Table B** sets out the location of the groundwater observation bores for measuring groundwater levels for the purposes of protecting groundwater dependent ecosystems associated with Breakfast Creek and the Anglesea River.

**Schedule 2 (Trigger levels)**

Schedule 2 sets out the method for calculating trigger levels. A trigger level is set each year for an observation bore and is calculated by subtracting from the starting groundwater level in that bore certain allowances for predicted drawdown (A) and climate variability and seasonable variability (B). The starting groundwater level is the mean daily groundwater level for the relevant bore over the thirty days prior to pumping first commencing under the Order. The Schedule specifies figures in relation to A and spells out a methodology for determining B.

The trigger levels are set at values to ensure the measurable drawdown in groundwater levels from pumping is no more than 0.1 metres at sites located downstream of groundwater dependent ecosystems to be protected. Based on the Project Impact Assessment, drawdown of less than 0.1 metres as a result of pumping will have no material and adverse impact on the environmental values and health of these ecosystems, allowing further time to collect additional data to better understand these ecosystems and their dependence on groundwater.

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