OTWAYWATER BOOK 20

Unfinished Business

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Email: otwaywater@yahoo.com.au www.otwaywater.com.au

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FOREWORD

The tranquil beauty and purity of the creeks and waterways of the Otways has inspired Malcolm Gardiner's spirited and continued campaign against underground aquifers being used as a water source.

Malcolm, a self confessed campaigner for social and environmental justice, advocates a multi disciplinary approach to ground water extraction in which environmental, social and economical impacts should be evaluated and fully supported by research.

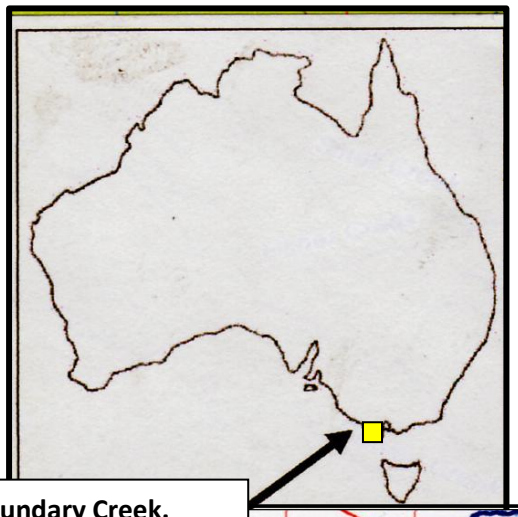
Otway Water Book 20 "Unfinished Business", deals with the many outstanding issues of management, administration and regulation while examining the implications of this extremely complex issue.

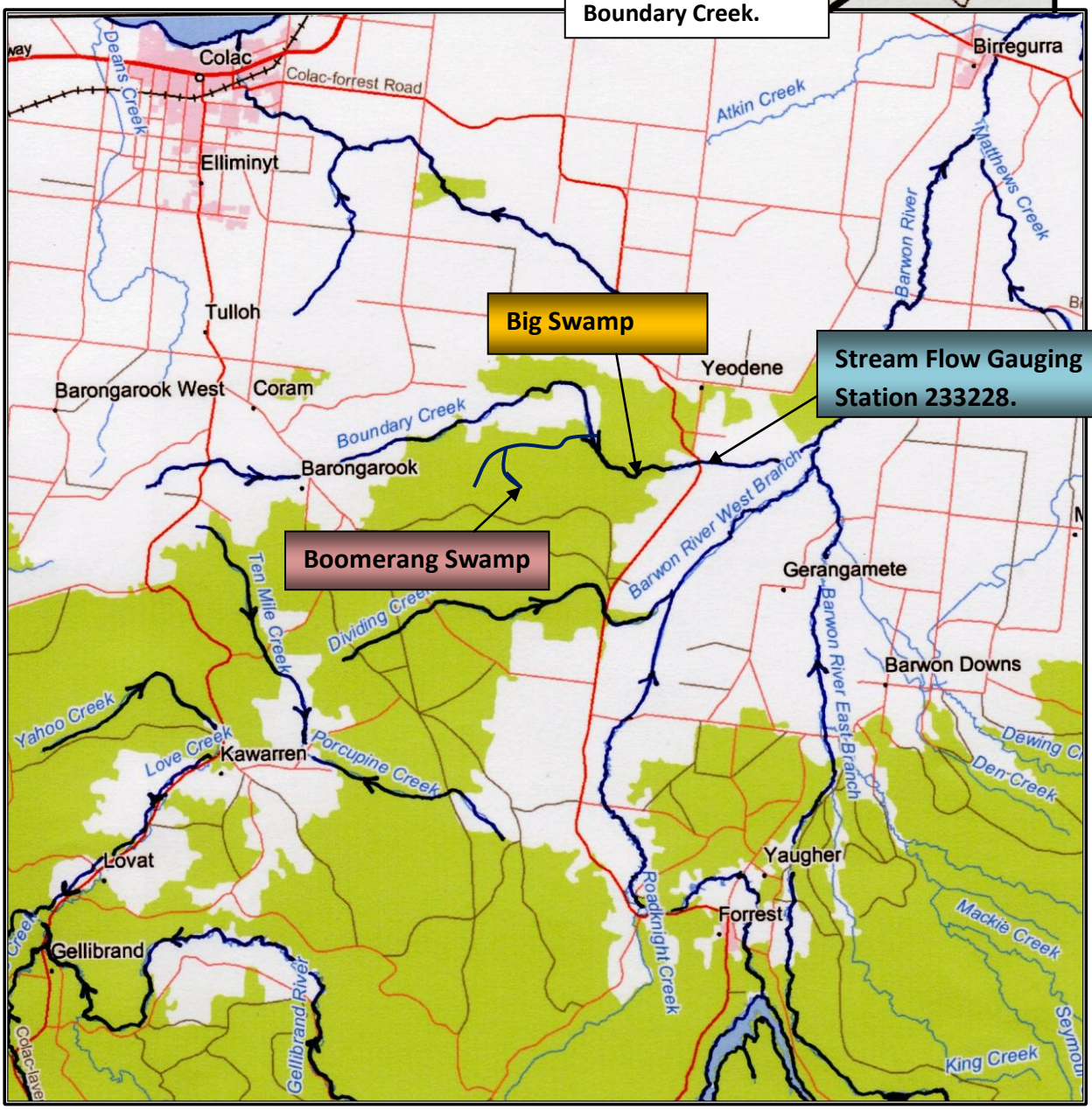
The Book asks many questions – questions yet to be answered, questions yet to be investigated in depth, questions that need to be answered for the future of all groundwater and our environment.

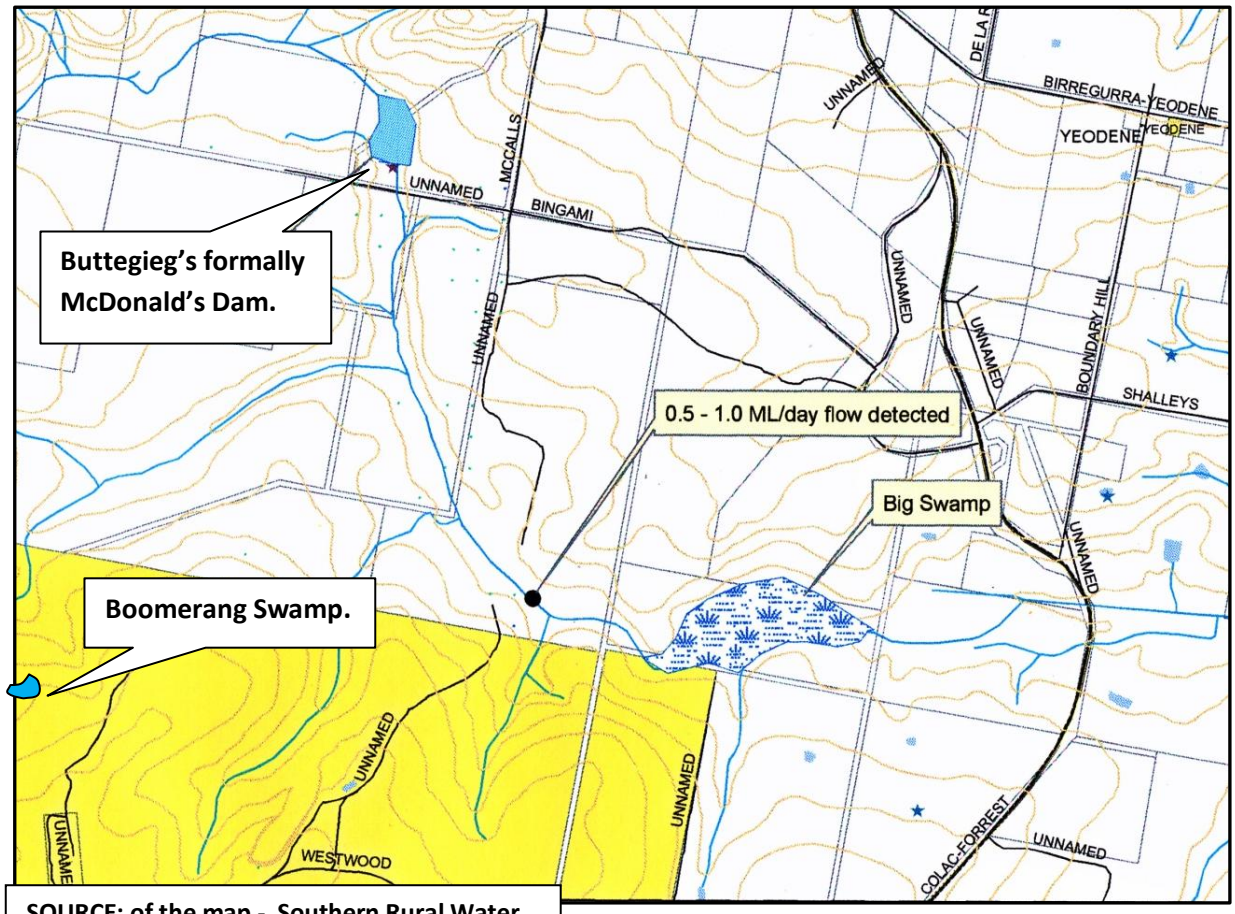
Councillor Lyn Russell
Mayor Colac Otway Shire
(2009-2010) (2012-2014).

LOCATION MAPS

The Big Swamp and Boomerang Swamp are located in an area of the foothills of the Otway Ranges known as the Barongarook High, a recharge area for the deep water aquifers that Barwon Water extracts urban water from. These swamps also fall well inside the area of influence from the residual drawdown effect.

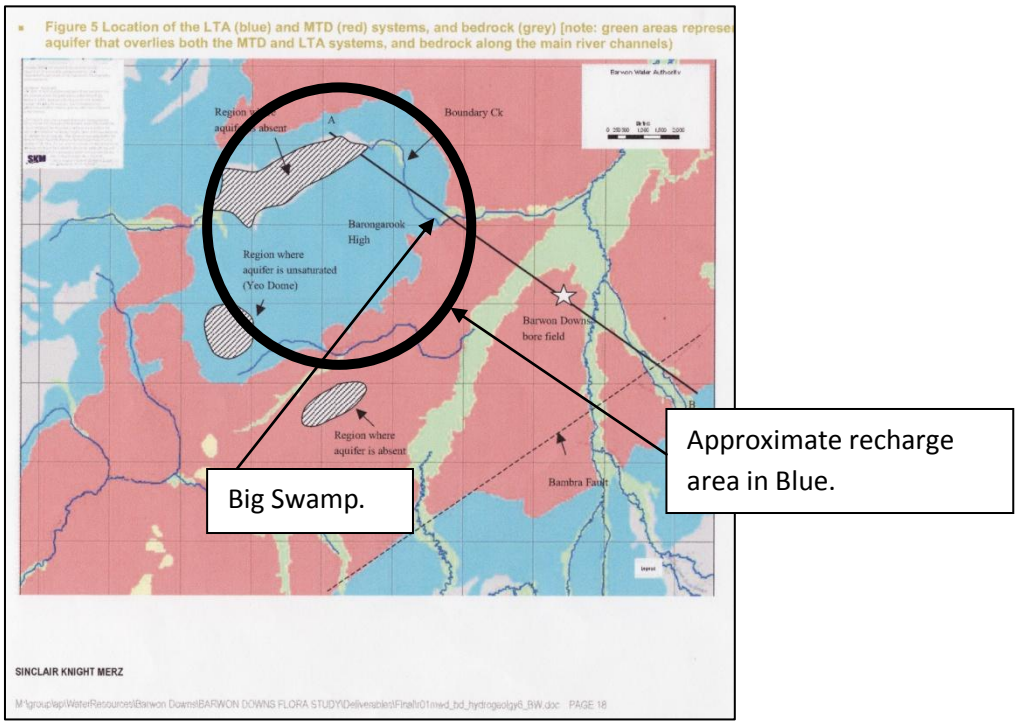






SOURCE: of the map - Southern Rural Water.

The Boomerang Swamp falls just outside the margin of this map.



Big Swamp.

Approximate recharge area in Blue.

Introduction

Unfinished Business. The over-allocation of water resources in the Otway Ranges has created many dilemmas. The biggest of these is the issue and ultimate failure of State Government Authorities charged with certain responsibilities that come in direct conflict with Barwon Water. Providing an adequate water source for industry and human consumption has taken precedent over most other issues.

As is often the case the environment and the rights of a small number of people living in an isolated area can be lost sight of when catering for the multitude in the larger towns and cities. The management and regulation of the Barwon Downs Borefield would appear to be a very good example of this type of happening. When management and regulators concentrate on one or two aspects of an extremely complex issue it is very easy to lose sight of the overall picture and fail to carry out tasks that are critical to proper management and administration.

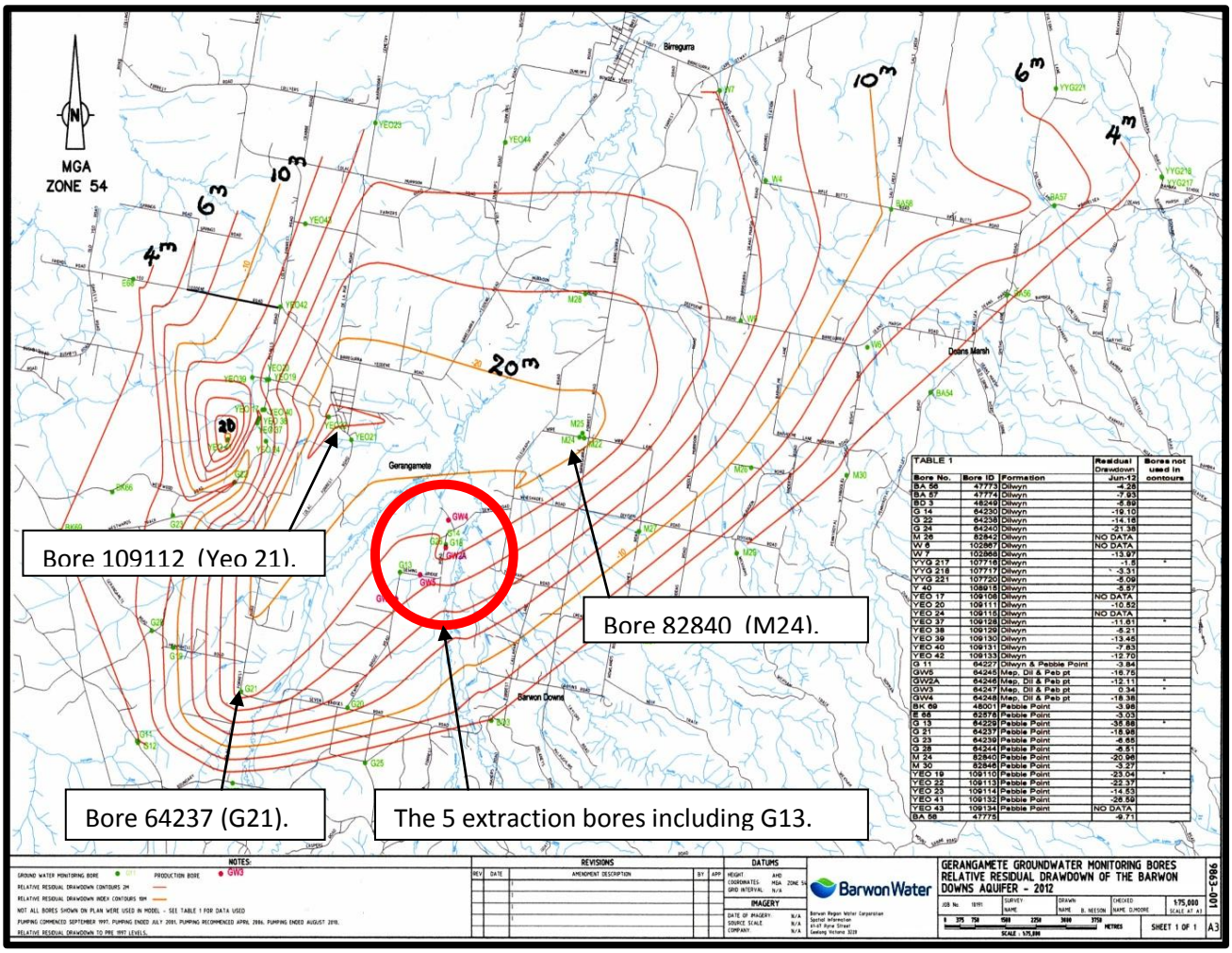
Some of these tasks are...

- Kawarren Groundwater investigation final report – 50 months outstanding.
- Causes of the creation of Actual Freshwater Inland Acid Sulfate Soils and the destruction of wetlands and pasture – 4 years.
- Lack of thorough scrutiny by Southern Rural Water when examining Barwon Water's annual Gerangamete Borefield report – on going since 2005.
- Lack of accountability by Government State Authorities, authorities that should be supporting the endeavours of the local communities and Colac Otway Shire to resolve issues – 4 years & on going
- Fire and Acid Sulfate Soil creation – since 1997
- Determining who made the decision to omit the Big Swamp from the 2008-09 Flora survey – 5 years
- Explanation of and implication of reporting multiple cones of depression throughout the area of residual drawdown when there is only one borefield – 8 years.
- Why the supplementary water released from the Otway to Colac Pipeline does not reach the farms it is intended for over summer months – years.
- Determining the connection between the Boomerang Swamp and the deep water aquifer Barwon Water is Pumping from – 10 years.
- Implications on water resources regarding Coal Seam Gas exploration and exploitation – pending
- Impacts on the Barwon Downs Borefield if the Colac water system is linked into the Barwon Downs Borefield – pending.

It would seem that many of these outstanding issues involving groundwater extraction from the Gerangamete and Gellibrand Groundwater Management Areas will continue to be outstanding for some considerable time. This book deals with many of these issues and examines their implications in regard to the principles of sound management, administration and regulation.

CHAPTER ONE
Recovery of the Deep Water Aquifers after pumping

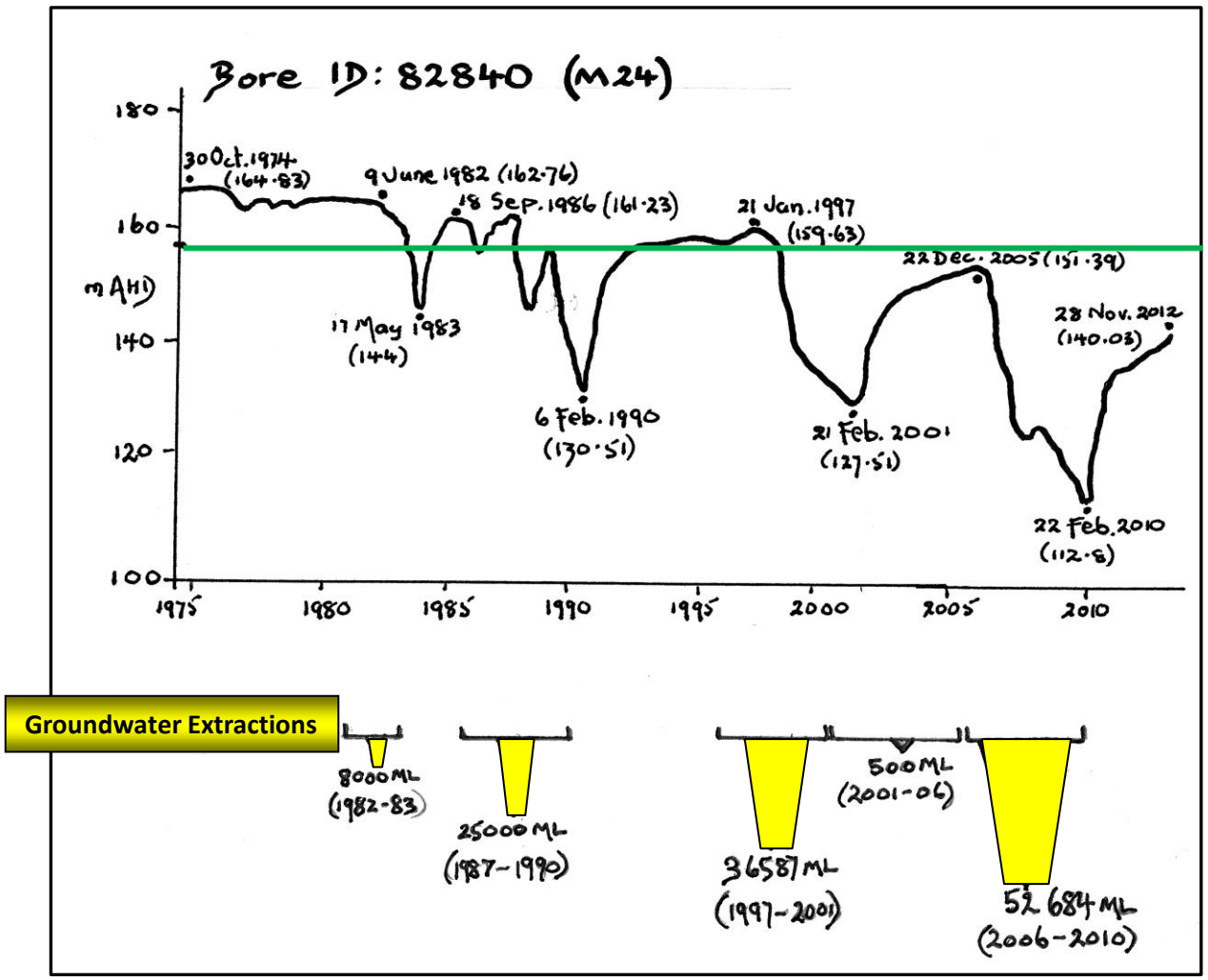
Since 1982 Barwon Water has extracted over 120 000 ML from the Barwon Downs Borefield; 8 000 ML in the 1982-83 drought; 25 000 ML in a stress test pump between 1987 and 1990 and over 80 000 ML during the latest drought. Temporary extraction ceased in August 2010. ***"The time of maximum depletion often may occur after pumping has stopped."***(US)



<u>Residual Map Source:</u> Barwon Water 2012.

Bores 109112, 64237 and 82840 have been chosen as representative of the influence groundwater extraction from the Barwon Downs Borefield has had on the water levels within the area of drawdown influence. Being unable to download the graphs, tracings were taken and the data on these tracings is represented as accurately as possible having slight variations.

This residual drawdown map depicts significant drawdown influence remaining even two years after pumping was temporarily ceased. The residual drawdown contours show the relative drawdown for the period 1997 to June 2012. It would be interesting to know whether these contours would differ if the calculations went back as far as the 1982-83 drought and the massive test pump extraction 1987-1990.



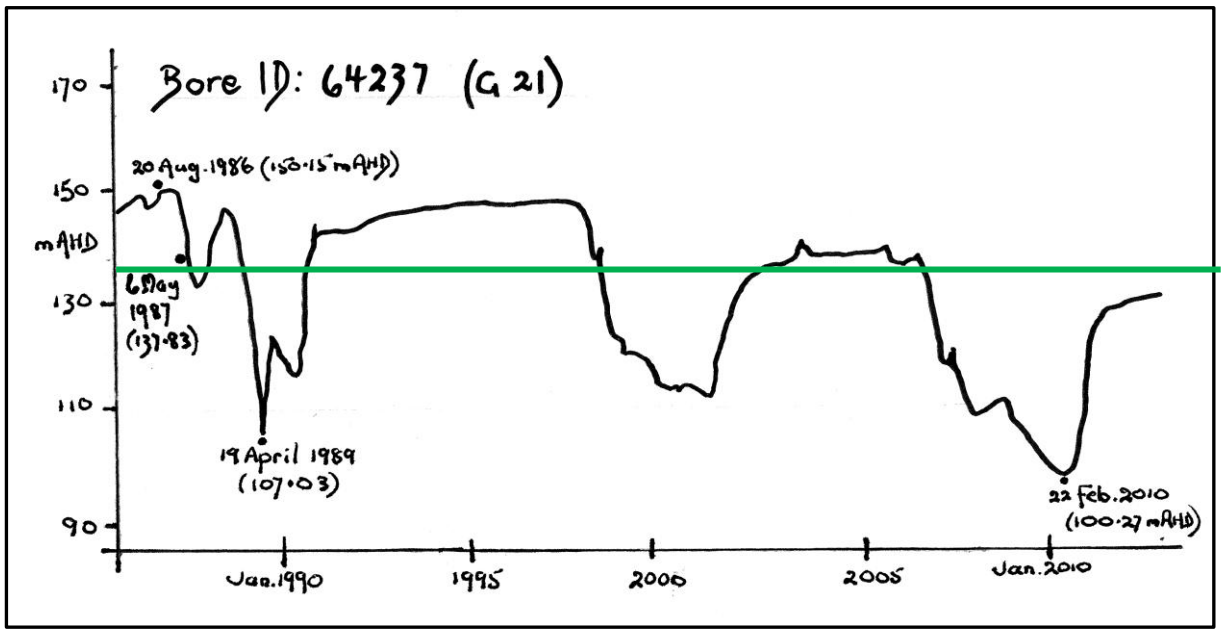
GRAPH SOURCE: Graph traced from Southern Rural Water website 11-10-2013. (www.srw.com.au/SRW_SOBN/BoreChart.aspx?bore=82840)

Top of Bore Casing at groundlevel is 157.18 m AHD (Australian Height Datum).

The water levels in this bore as with Bores 64237(G21) and 109112 (Yeo 21) have dropped during or just after the groundwater extractions (shown in yellow) that have taken place at the Barwon Downs Borefield. Recovery is most evident after pumping ceases.

Bore 82840 is situated on the top on a hill in Wire Lane and was an artesian bore pre borefield extraction. Water would squirt approximately 8 metres above groundlevel. At one stage the water level had been drawn down around 38 metres below groundlevel.

Recovering has taken place when there have been periods of little to no pumping. However, the water table level is still some 17 metres lower than pre 1982-83 drought extractions even though there have been three wet winters since pumping was temporarily halted.

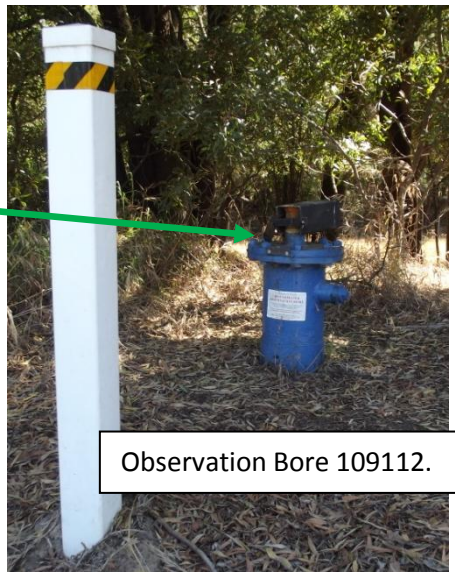


GRAPH SOURCE: Traced from Southern Rural Water website 11-01-2013.

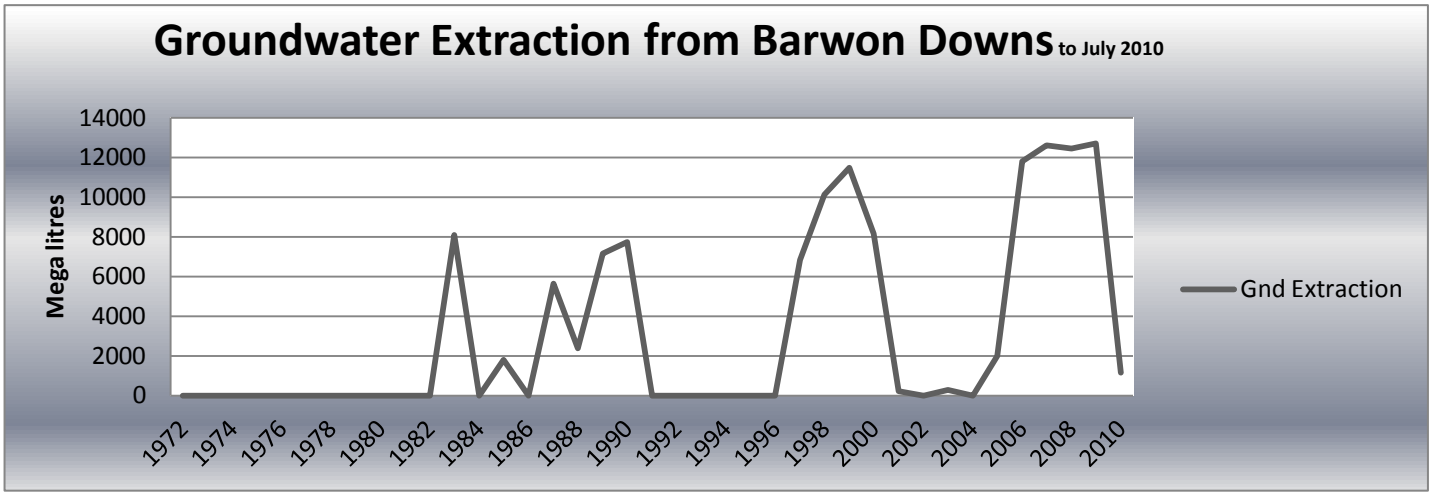
Top of Bore Casing (TOC) at groundlevel is 137.97 m AHD

This bore at the corner of Seven Bridges Road and the Colac to Forrest Road is one of the closest deep water bores to the Barwon Downs Borefield that can be accessed on the SRW website. This bore was artesian in 1985 and at various other stages as indicated by the hydrograph above the green line. This bore's hydrograph would be very similar to the ones for the five extraction bores at the borefield (see page 8). The drawdown in Bore 64237 has been lowered over 50 metres similar to the drawdown experienced at the borefield site. On 29 February 2012 the mAHD was 129.42, still over 8 metres below groundlevel and around 20 metres below the artesian level of the 1980s.

NOTE: The gate valves on the artesian bores have recently been locked. If the water table rises above groundlevel any released water could be dangerous to the unwary.

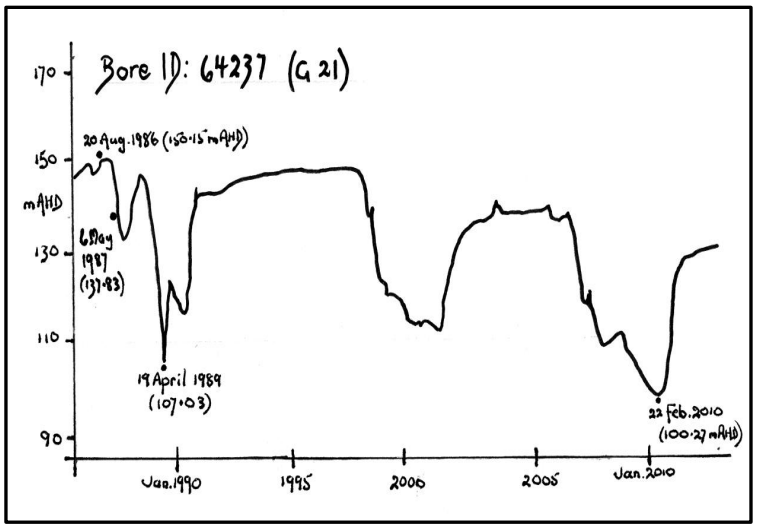


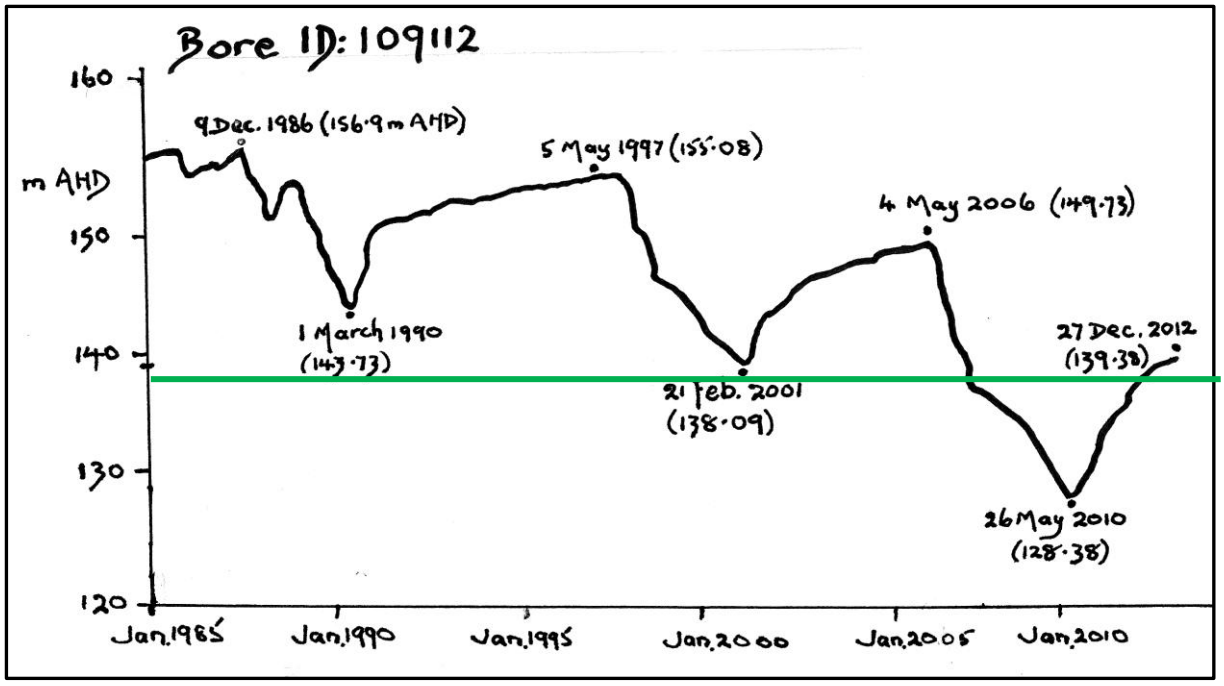
This is Bore 82840 at Wire Lane before it was reconditioned sometime between 2010 and 2012. The Top Of Casing (TOC) was approximately 900mm above groundlevel.



These two graphs have been manipulated in an attempt to line up the years of groundwater extraction with the observation bore recordings for the same period.

During extraction periods the bore levels drop and then begin to recover after pumping ceases.



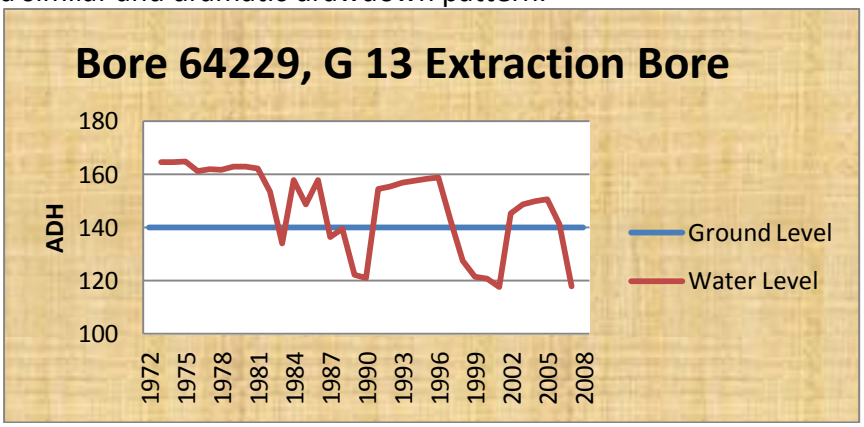


GRAPH SOURCE: Traced from Southern Rural Water website 11-01-2013.

Top of Bore Casing at groundlevel is 138 m AHD.

This observation bore is situated close to the bridge on the Colac Forrest Road where it crosses Boundary Creek. Pre groundwater extraction in 1982 the water from this bore was artesian, squirting around 18 metres into the air. At one stage the water level has been dropped approximately 10 metres below groundlevel. The bore has recovered to such a level that it is once again artesian. The artesian water level has another 16 metres of recovery to be back at the 1985 levels.

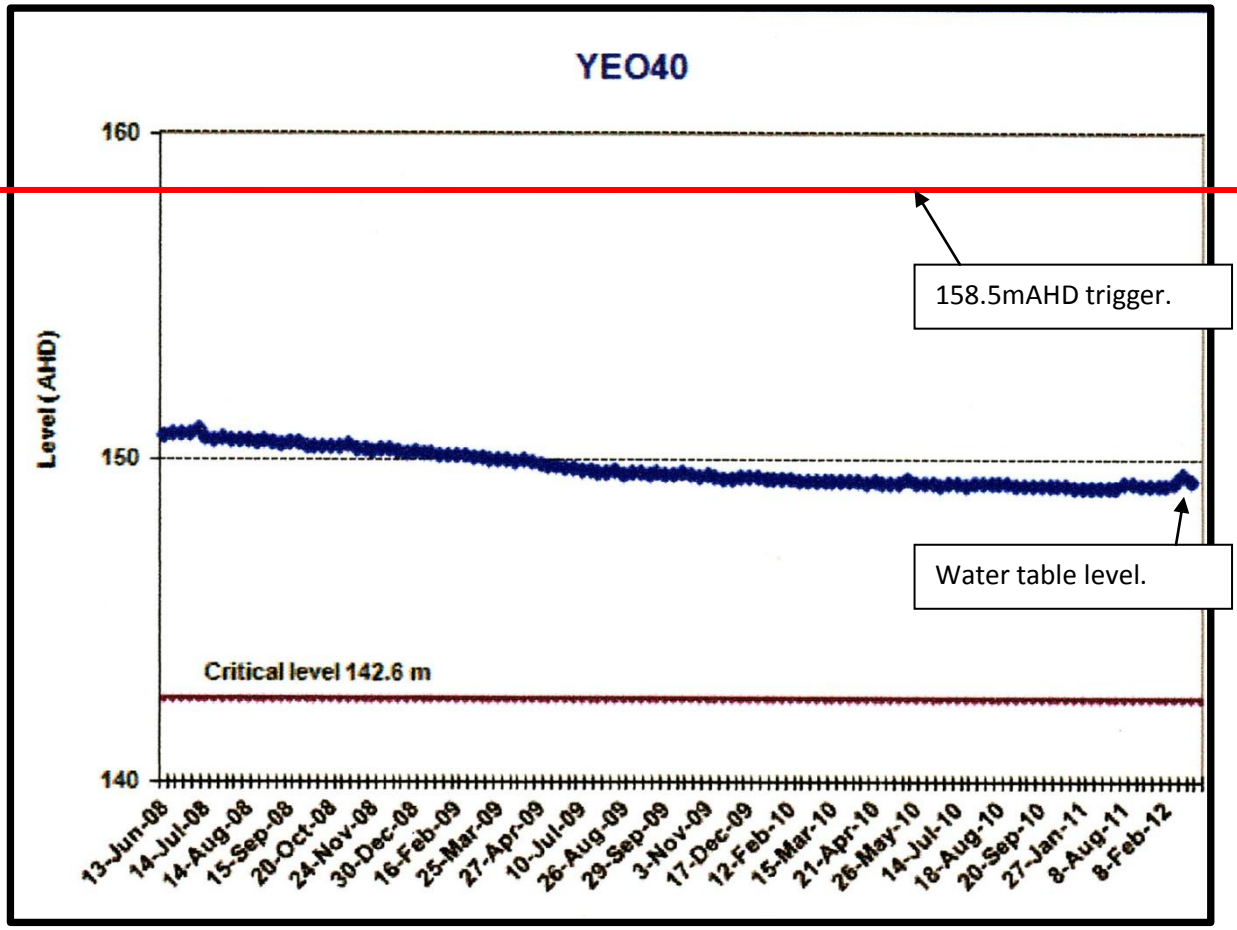
The Southern Rural Water (SRW) website for the hydrographs of the five extraction bores, including Bore 64229 (G13) and Observation Bore 109131 (Yeo 40) indicate that no bores with these IDs could be found. However, this graph taken from Otway Water Book 8 exhibits a similar and dramatic drawdown pattern.



SOURCE: State Government Vic Water Data warehoused website (taken from Otway Water Book 8).

Yeo 40 is one of the trigger level bores designated under the groundwater extraction licence for the Barwon Downs Borefield and has two trigger levels allocated to it. Yeo 40 is a significant and important observation bore. Why some bores are not on the SRW website is a mystery.

One trigger level is for subsidence (142.8mAHD) and the other is the trigger for supplementary water to be released (158.5mAHD) into Boundary Creek.



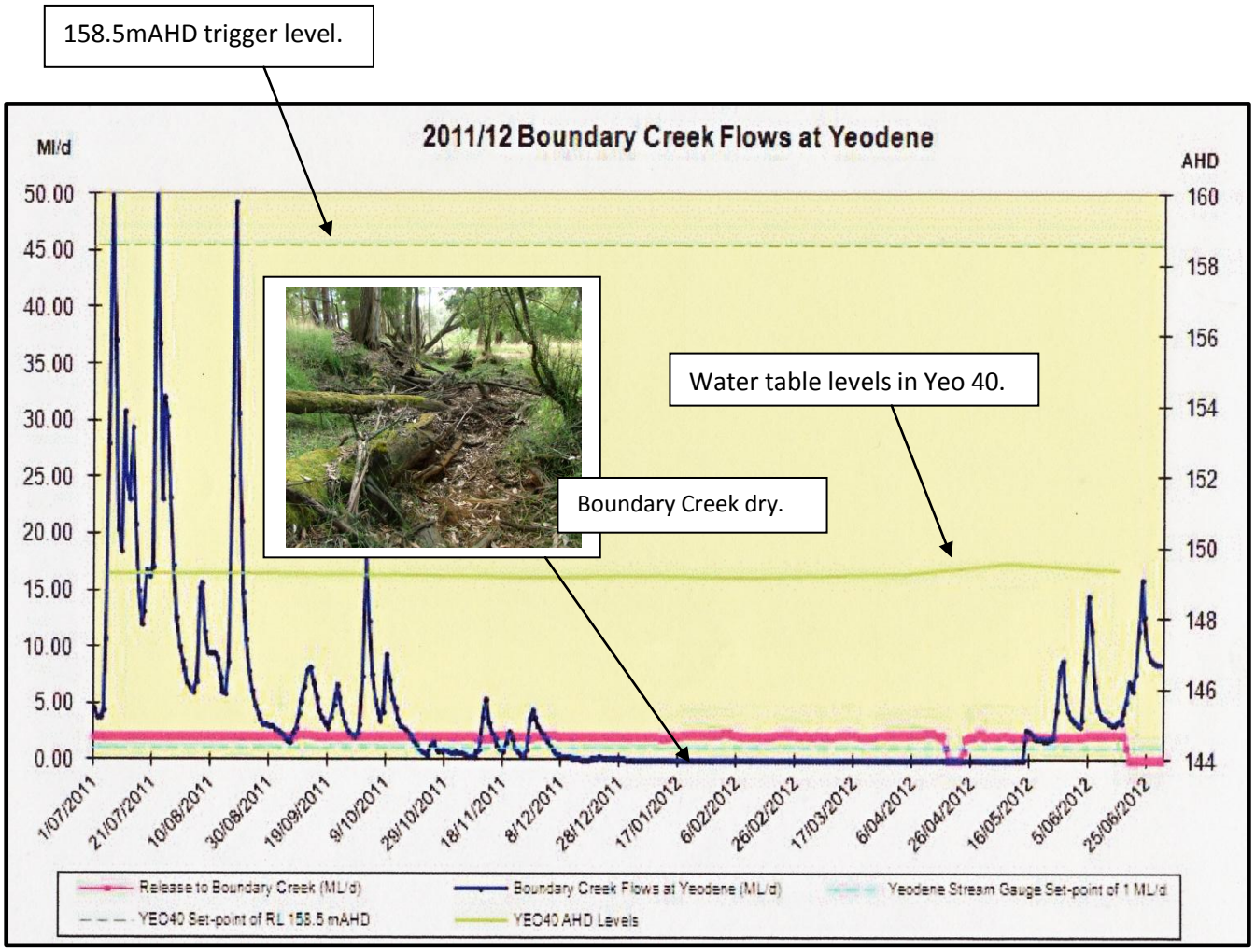
GRAPH SOURCE: Barwon Water 2011-12 report on Gerangamete Borefield to SRW.

Sinclair Knight Merz calculated that Boundary Creek would dry up if the water table was lowered below 158mAHD so a 0.5m tolerance was applied to the trigger level. If this 158.5 level was reached then supplementary flows out of the Otway Colac pipeline (or other sources) were to be released into Boundary Creek. It is quite evident from this graph that this trigger level has been exceeded for some considerable time. Even though groundwater extractions ceased in August 2010 there are still many metres of recovery required before the water table rises above this trigger level.

It is anticipated that recovery above the 158.5m AHD will take some considerable number of years, if in fact it ever does. Otway Water Book 18, page 101 examines the amount of recharge and extractions for the period 1982 – 2010 and concluded that extractions had outstripped recharge by at least 60 000 ML. At a recharge rate of 4000 ML/y and with no further extractions or droughts, recovery at the least would take another 15 years. Evans[10] had this to say in 2007...

> ***"The time lag between the starting pumping groundwater and the resulting effects on a stream can vary from only hours to many centuries."***

He also mentions in this same report that these effects have been known to go on and continue for many years after extraction ceases.



GRAPH SOURCE: Barwon Water 2011-12 report on Gerangamete Borefield to SRW.

Late in 2012 Southern rural Water indicated that water resources within the Otway Ranges was very close to "back to normal."
In its November 2012 Local Water Report these statements were made:

- ***"The entire Otway Coast basin received good autumn rains and heavy to very heavy rainfall in winter..."***
- ***"...and setup good flows for summer..."***
- ***"...with all storages filling and spilling."***

Water extraction from the Gellibrand and Carlisle Rivers had no rostered restrictions implemented last season while Lake Purrumbete irrigator licence holders took water throughout the last season. Lake Purrumbete will be full for this coming 2012-2013 season.

This report goes on to say these things about the Groundwater Management Areas :

"Gellibrand

Some decline is evident in almost all monitoring bores since 1997 (around 1-4m). Of 20 monitoring bores, 15 are at, or very near, their lowest historical level. There has been no significant recharge during 2011/12.

Jan Juc

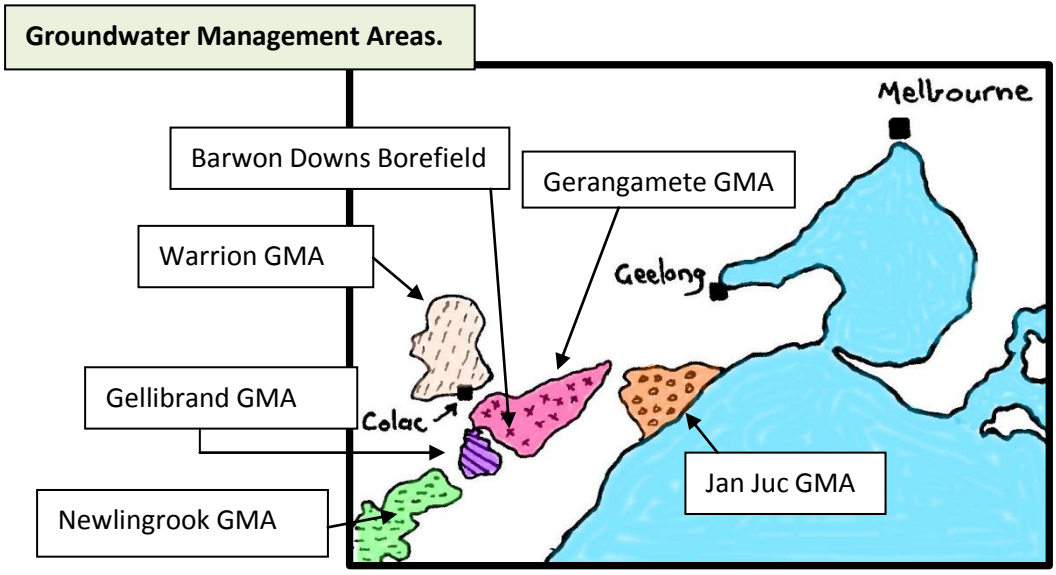
Long term levels are stable or slightly declining.

Newlingrook

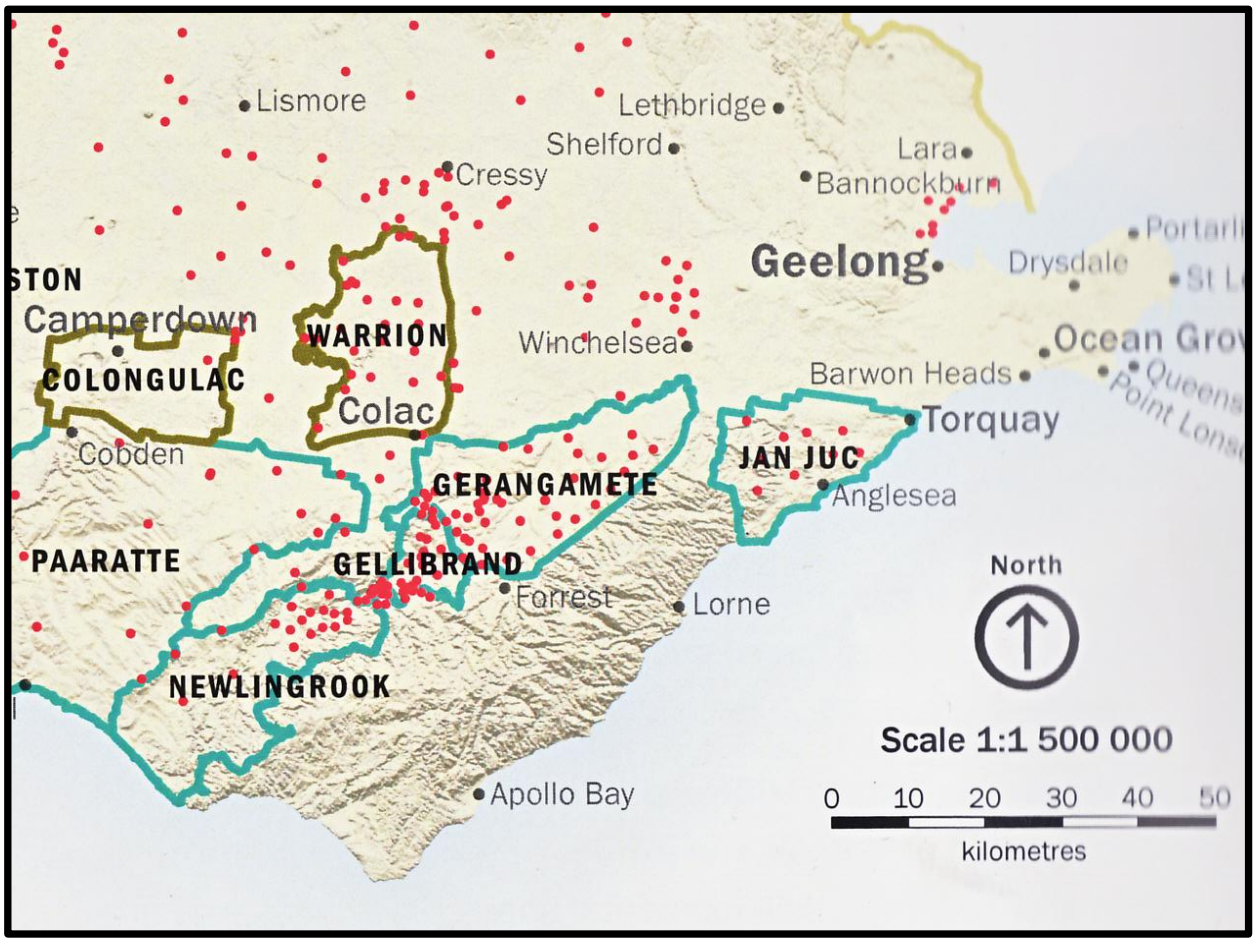
Most of the monitoring bores are located in the northern half of the Groundwater Management Area (GMA), close to Gerangamete GMA. Water levels across the GMA are stable to slowly declining (up to 0.25m/year). For 2011/12, most bores are relatively steady."

After reading this one could be forgiven for gaining the impression that the Gellibrand GMA is by far the groundwater district in greatest decline; that Jan Juc is "travelling" nicely and that Newlingrook is generally doing fine as well. However, the manner in which this information is written appears to be giving a false impression. If Newlingrook's GMA decline is calculated over the same 15 year period as the Gellibrand GMA, the decline would 3.75m, not dissimilar to the Gellibrand GMA. The Jan Juc GMA has had Alcoa and Barwon Water extracting large amounts of water with strangely no apparent effect, but more curious though, the Newlingrook GMA is nowhere near "***close***" to the Gerangamete GMA as stated (see maps below). And why has there been no mention of the declines in the Gerangamete GMA. Declines of up to 60 metres over the same 15 year period should have demanded some comment.

There must be a reason that it has been made to appear that the Gellibrand GMA is alone in its degree of decline. Also, the question needs to be asked why haven't all of these GMAs groundwater levels started to rise like the ones in the Gerangamete GMA?



MAP SOURCE: Our Water Our Future, June 2005 , State Water Report 2003-2004.

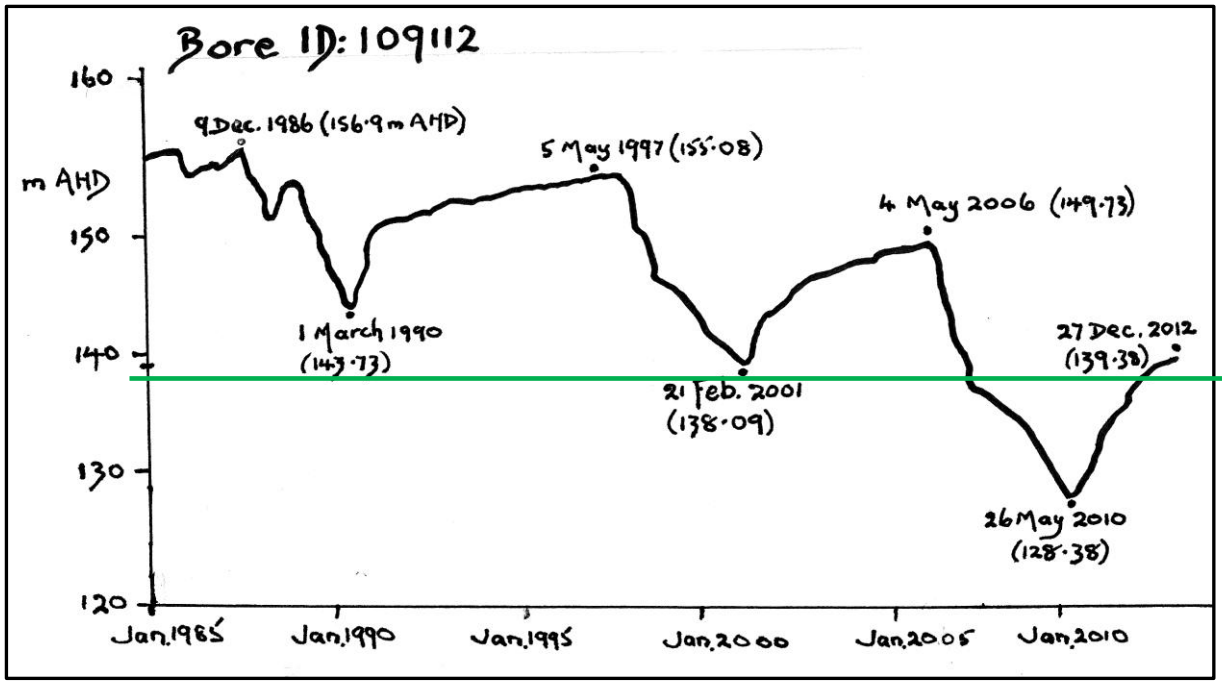


MAP SOURCE: Southern Rural Water/Australian Government National Water Commission, "South West Victoria Groundwater Atlas 2012."

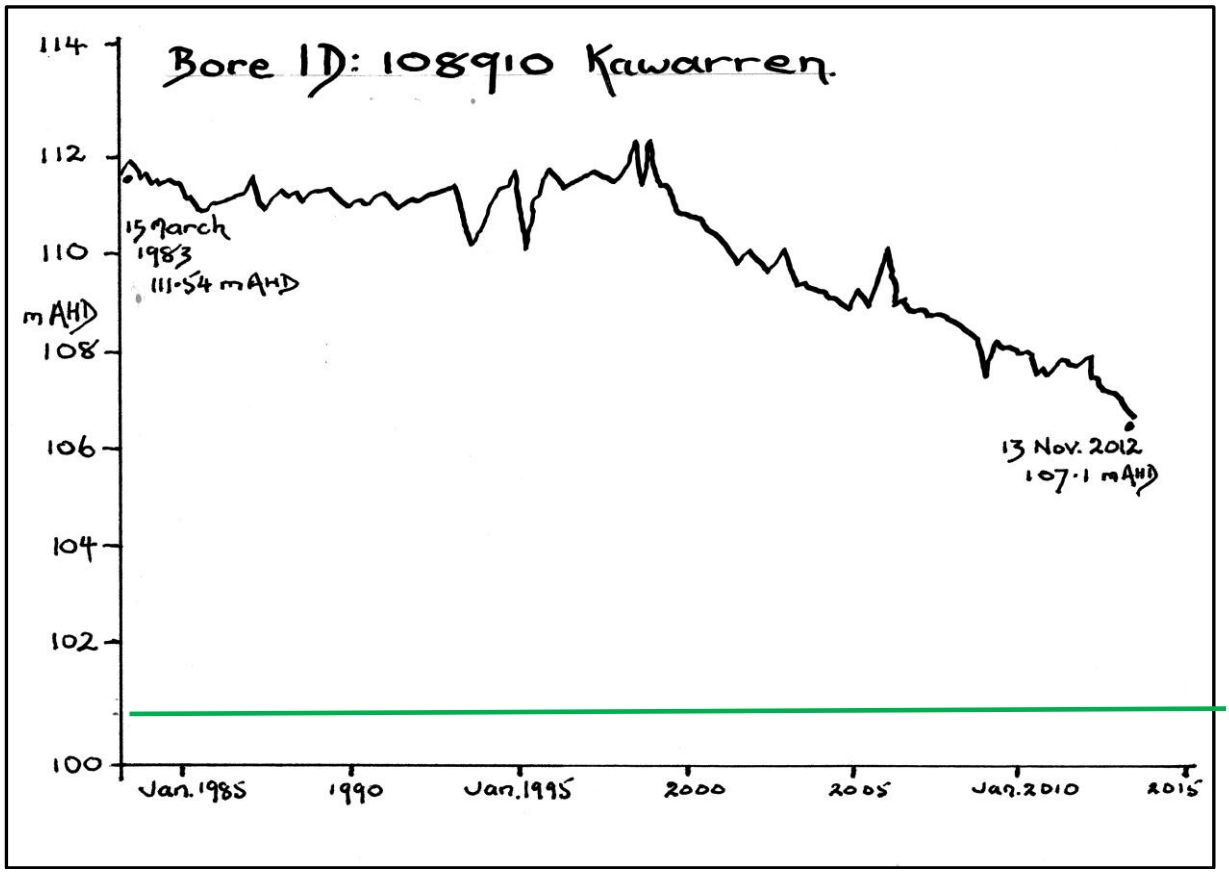
It is puzzling why this SRW report didn't give an update on groundwater levels in the Gerangamete GMA. Some bore water levels have been recorded with drops of up to 60 metres with all observation bores in the deep water aquifers having dropped throughout the Gerangamete GMA far in excess of neighbouring GMAs groundwater levels. Note that the Gellibrand and Gerangamete GMAs share a common boundary in part and that the Newlingrook GMA is distanced from the Gerangamete GMA by the Gellibrand GMA.

There can be no doubt that the recovery of groundwater levels in the deep water aquifers of the Gerangamete GMA is taking place. This may be the case but, even after three years of wet winters and no groundwater extraction from the Barwon Downs Borefield, the recovery to pre groundwater extraction still has some considerable distance to go. The two Barwon Water media releases found on pages 113 and 117 are relevant to this discussion.

Note: **Official Groundwater Management Area Maps are...**
Newlingrook Groundwater Management Area map is PLAN No. LEGL./04-153.
Gellibrand GMA map is PLAN No .LEGL./14-134, and
Gerangamete GMA map is PLAN No. LEGL./04-135

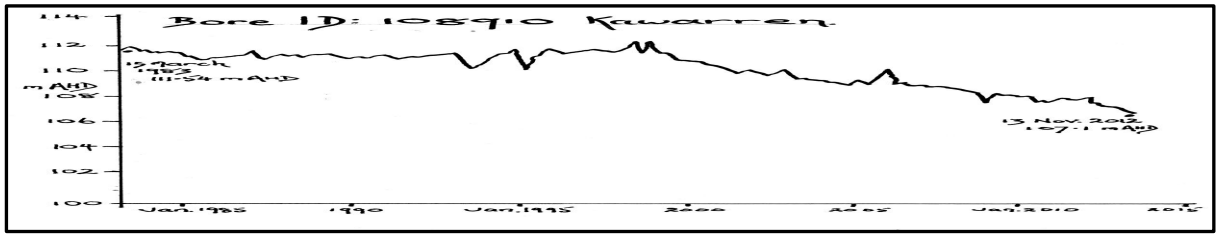


Bore 109112 is under the direct influence of the Barwon Downs Borefield and Bore 108910 (below) at Kawarren is in the adjoining Gellibrand Groundwater Management Area with limited influence from the Barwon Downs Borefield.



Top of Bore Casing at groundlevel is 100.81 m AHD

If the Kawarren Bore 108910 hydrograph was compressed into roughly the same mAHD vertical scale as Bore 109112 it would appear something like this, a remarkably much flatter, gradual and even gradient.



As Southern Rural Water's November 2012 report indicated there have been decline in the observation bores within the Gellibrand GMA ranging from 1 to 4 metres in the 15 years from 1997. This Kawarren bore fits into the top end of this decline but cannot be, even in the wildest sense, be likened to the decline in the bores located in the area of influence from the Barwon Downs Borefield in the Gerangamete GMA.

Bore 108910 at Kawarren.

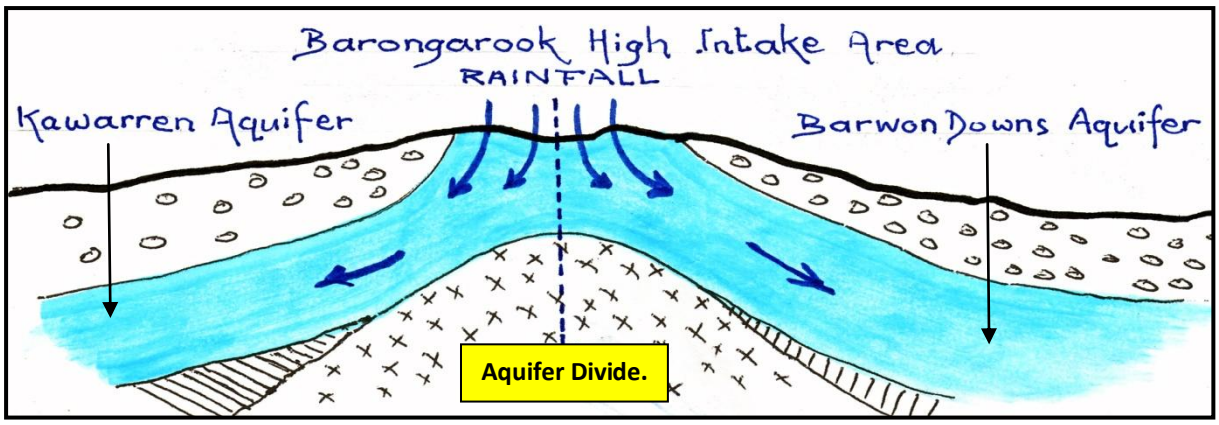
It is interesting to note however that the Kawarren bore has continued its decline when Bore 109112 has shown a marked recovery since groundwater pumping ceased in 2010. Two possible explanations for this could be...

ONE

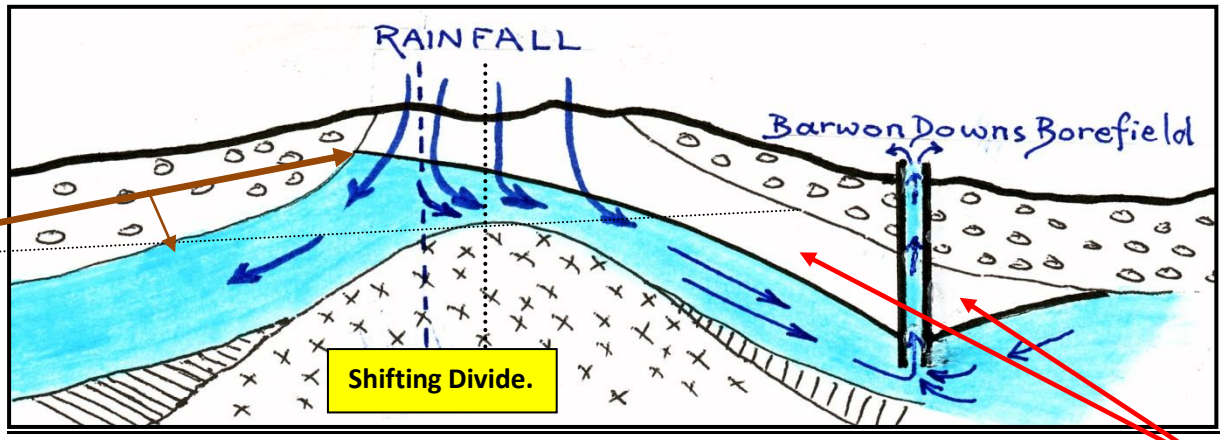
- that as the water table levels out in the Gerangamete GMA, water that normally recharges the adjoining Gellibrand GMA is being sucked in a different direction. 1994 reports discussed the possibility of the aquifer divide shifting and causing groundwater flows to change course.

The Aquifer Divide will shift.

In 1994 it was anticipated that the aquifer divide between the Kawarren Ten Mile (Gellibrand GMA) and Boundary Creek (Gerangamete GMA) catchments would shift towards the Ten Mile Creek Catchment as pumping from the Barwon Downs Borefield progressed.[27][29] The diagrams over the page represent the concepts involving the aquifer divide between the Kawarren and Barwon Downs branches. The aquifer divide shifts towards the Kawarren area in relation to the amount and duration of groundwater extracted.



This conceptual diagram represents the position of the aquifer divide pre groundwater extraction.



This diagram illustrates how the extraction of groundwater draws water that would normally flow in the Kawarren direction but now flows towards the Barwon Downs Borefield. This shifting of the aquifer divide closer to Kawarren in the Ten Mile Creek Catchment lessens the amount of recharge going into the Kawarren region of the aquifer.

This point of **zero influence** would extend further into the Kawarren area as the water levels out in the **depleted aquifer**.

TWO

- **The area of influence Expanding.**

  The other possibility that could also be having an effect on the Kawarren recharge area is that as the Barwon Downs Borefield watertable levels out filling the gaps from extraction, water is drawn from further and further afield. In effect this would mean that the area of drawdown influence to the point of zero would move further out from the borefield even though extraction ceased two years ago.

Of course the late 1990s, early 2000s drought would have had its effect causing declining water table levels as well. However, the drought's influence was minimal on GMAs that did not have massive urban groundwater extraction. It has been three years since the drought and it would be reasonable to expect Bore 108910 at Kawarren to begin recovery and not continue its slight decline.

For a solution to this conundrum and in an effort to better understand the movement of groundwater in the region it is difficult to understand why Southern Rural Water does not insist that Barwon Water provide maps of residual drawdown influence out to the point of zero in the annual Gerangamete Borefield reports.

> In a reply to a request for such maps Barwon Water letter, Ref. 40/220/0030V had this to say...
>
> ***"Barwon Water's available maps have been provided to you. These maps satisfy the requirements of the groundwater licence."***

As can be seen with the latest 2012 residual drawdown map (see page 21) stopping the drawdown contours at 4m and up to 14m is far from satisfactory. As with any query or suggestion of review the reply invariably states that there will be ample opportunity when the licence is reviewed in 2019.

As per the licence requirements the limited data provided indicates the deep water aquifers are recharging within the reporting area.

> ***"The borefield was taken off-line in 2010 and has shown significant signs of recovery."***
>
> (Extract from Barwon Water media release issued Thursday **21 June 2012** – full document see page 117 ★)

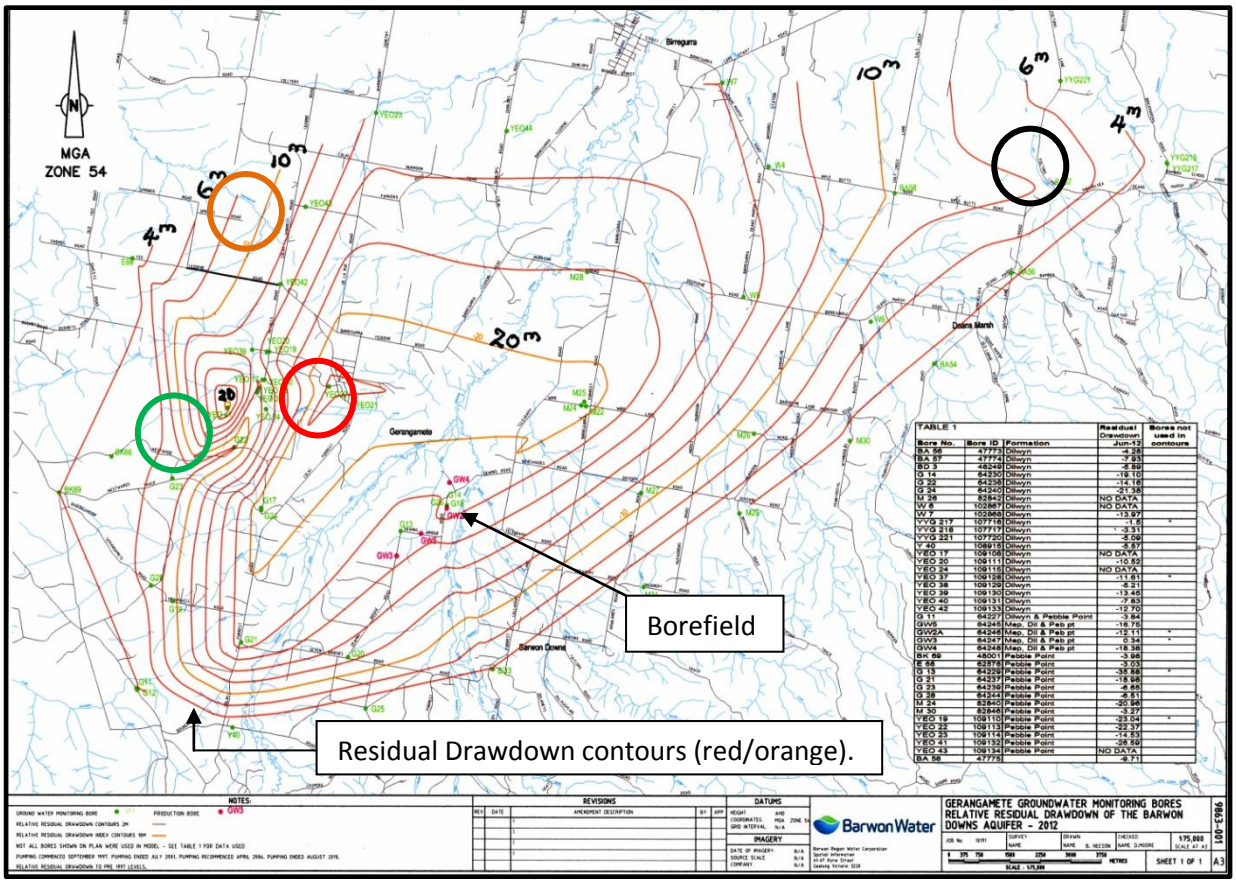
There can be no doubt that the "borefield" is recovering at great depths but it has a substantial way to go before a similar recovery is experienced at the surface level.

Even though the Gerangamete Groundwater Management Area is experiencing recovery of its groundwater levels 3 years after pumping has ceased, the next chapter throws considerable weight behind the findings of Rick Evans when he reported that the effects from groundwater extraction can continue for some considerable time (see page 13).

(Page 96 is very relevant and may prompt a re-reading of this chapter.)

CHAPTER TWO
The spread of AASS

The question whether the extraction of groundwater far in excess of the 1990 Permissible Annual Volume has been causing Potential Acid Sulfate Soil to turn into Actual Acid Sulfate Soil sites has been asked for some years now. There is no doubt three sites have been proven to be Actual Acid Sulfate Soil (AASS) sites that have appeared since the extraction of groundwater at the Barwon Downs Borefield. A fourth site is borderline AASS. All of these sites fall well within the residual drawdown created by the borefield extractions.



Map Source: **Barwon Water Gerangamete Groundwater Management Area Report to Southern Rural Water 2011-2012.**

Significantly there have been no other studies or reports that have identified any other inland actual acid sulfate soil sites in the Otway Ranges other than these found within the area of influence of the residual drawdown contours created by the Gerangamete/Barwon Downs Borefield. There may be many explanations for this phenomena and groundwater extraction may well be one of them. Until the Government authorities take the occurrences of these Actual Acid Sulfate Soil sites seriously and are prepared to finance the appropriate studies it is possible that the cause(s) may never be known.

This site ◯ is extremely well documented and is known locally as the Big Swamp and was knick named Jurassic Park by the CFA in 1997/98 fires. The LAWROC Landcare Group commissioned EAL of Southern Cross University to collect and analyse samples. The resulting report[5] confirmed the Group's fears that the Big Swamp was indeed an Actual Freshwater Inland Acid Sulfate Soil site. The La Trobe acid sulfate soil study that was commissioned by the Corangamite Acid Sulfate Soil Multi Agency Steering Committee confirmed this earlier finding. Three sites in Australia have had a soil sample test of over 16%S_{CR}. The Big Swamp is one of those sites.

This site ◯ is not quite as bad as the Big Swamp but still had one assay test of 10%S_{CR} (Reduced Inorganic Sulfur) which is approximately 333 times above the Victorian trigger standard for serious concern. At these levels if there was a bountiful supply it would make a profitable sulfur mining venture for the farming enterprise concerned.

Post completely "eaten" off.


Site of the 10%S_{CR} test result.

This site is borderline Actual Acid Sulfate Soil but most certainly has the potential to generate some unusual happenings. The site is Boomerang Swamp and Otway Water Book 18 deals solely with this site.

This star picket was placed in this dry swamp in 2008 and was inundated for a maximum of two months between October and December 2012. As the water receded to different levels the corrosion became most evident.

The latest site ○ is also well inside the influence of the residual drawdown and is also decimating farm pasture.

Time for concern? Most definitely. However, as the state authorities refuse to look at the causes of the Big Swamp's demise it is doubtful that anything will be done about these other sites other than to map them, and confirm what already is known; that they are Actual Acid Sulfate Soil sites.

In a letter dated 16 July 2009 the then secretary of the Department of Sustainability and Environment included this statement... "Evidence of the development of ASS in other parts of the catchment are starting

to appear..." (see page 88). In January 2013 the secretary of the Department of Sustainability and Environment was asked for this evidence as well as a document produced by SKM (see page 88).

Department of Sustainability and Environment

8 Nicholson Street
PO Box 500
East Melbourne Victoria 8002
Australia
Telephone: (03) 9637 8000
Facsimile: (03) 9637 8100
DX 210098

Ref: SEC009287
File: CS/07/3073

Mr Malcolm Gardiner
1805 Colac Lavers Hill Road
KAWARREN VIC 3249

Dear Mr Gardiner

GROUNDWATER EXTRACTION AT BARWON DOWNS

Thank you for your letter received by this Department on the 11 January 2013. In your letter you request a copy of the SKM report 'Recommendations for Groundwater Licence Conditions', and evidence of development of acid sulfate soils in 'other parts of the Barwon River catchment'.

The SKM report to which you refer was commissioned by Barwon Water. Please contact Justin Franklin at Barwon Water to request a copy.

LaTrobe University are currently conducting a PhD study into inland acid sulfate soils in the Corangamite Catchment Management Authority area. The study is due to be completed this year. For more details on the progress of the PhD, please contact Associate Professor John Webb at LaTrobe University on (03) 9479 1273 or email john.webb@latrobe.edu.au for information.

Thank you for raising this matter with me.

Yours sincerely

12/2/13

Graeme Turner
Executive Director, Water Resources Division
Water Group

Privacy Statement
Any personal information about you or a third party in your correspondence will be protected under the provisions of the Information Privacy Act 2000. It will only be used or disclosed to appropriate Ministerial, Statutory Authority, or departmental staff in regard to the purpose for which it was provided, unless required or authorised by law. Enquiries about access to information about you held by the Department should be directed to the Manager Privacy, Department of Sustainability & Environment, PO Box 500, East Melbourne, 8002.

State Government Victoria

When Peter Harris wrote that evidence of other ASS sites were appearing in the catchment the LaTrobe university study was still being "*scoped out*." In fact the Corangamite Inland Acid Sulfate Soil Multi Agency Committee had difficulty gaining a forum at that stage, and meeting after meeting was postponed. Eventually, when the brief was given to LaTrobe University it included looking at only two sites, one south and one north of the Princes Highway. The one north of the highway which is outside the catchment, was eventually found to have sufficient buffering capacity to prevent Actual Acid Sulfate Soil and the other site was the Big Swamp. There were no other identified sites or even the slightest evidence of other sites in the catchment. More nonsense.

CHAPTER THREE
Councillor Stuart Hart's Efforts.

Stuart Hart has shown concern for the environmental impacts that have taken place in the Barongarook High region of the Gerangamete Groundwater Management Area (GMA) for some considerable time. Only through the efforts of the Colac Otway Shire, and this took two years to achieve, did a committee of state authority representatives form to look at Inland Acid Sulfate Soils in the Shire's district. In a follow up attempt to bring the issues involved to the attention of state authorities and prompt some affirmative action on their part, the following three resolutions were moved and passed at an Ordinary Council (Colac Otway Shire) Meeting 27 June 2012.

MOTION 1

MOTION - MOVED Cr Stuart Hart seconded Cr Geoff Higgins that:

Council Notes:

1. ***That it has an appointed representative on the Corangamite Acid Sulfate Soil Multi-Agency Steering Committee.***

2. ***That the Council instructs the CEO to advise its appointed representative to move a motion that this committee investigates the cost and scope of investigating the cause(s) of the acidification of the "Big Swamp" at Yeodene.***

CARRIED 7 : 0

MINUTES - 27/06/2012 Page 55

The original motion was changed from this...

2. ***That the Council instructs the CEO to advise its appointed representative to move a motion that this committee investigates the cause(s) of the acidification of the "Big Swamp" at Yeodene.***

...which is unfortunate. This committee representing seven state authorities should be the one actively pursuing the implementation of a study investigating the cause(s) of the Big Swamp's demise, not the Colac Otway Shire as it appears in the events that follow.

OM122706-25 INLAND ACID SULFATE SOIL SITE - YEODENE

Recommendation

That Council consider the contents of this Notice of Motion.

2 ***MOTION - MOVED Cr Stuart Hart seconded Cr Geoff Higgins that:***

Council Notes:

1. ***The "Big Swamp" at Yeodene is now known to be an "Actual Inland Acid Sulfate Soil Site".***
2. ***Council requests that the Environmental Protection Agency (EPA) investigate this site known as "Big Swamp" at Yeodene and determines whether it should be declared a contaminated area.***
3. ***That the complete EPA unedited investigation results are promptly forwarded to Council for consideration.***

CARRIED 7 : 0

OM122706-26 OTWAY TO COLAC PIPELINE - RELEASE OF WATER

Recommendation(s)

That Council consider the contents of this Notice of Motion.

3 ***MOTION - MOVED Cr Stuart Hart seconded Cr Chris Smith that:***

Council Notes:

1. ***That Council requests Southern Rural Water to investigate and report to Council, that if Barwon Water is releasing water into Boundary Creek, why the supplementary water does not reach the stream flow gauging station Number 233228 at the Colac to Forrest Road bridge when there are no rainfall flushing events.***
2. ***That the complete Southern Rural Water unedited investigation results are promptly forwarded to Council for consideration.***

CARRIED 7 : 0

www.colacherald.com.au

Colac Herald, Wednesday, July 4, 2012 3

Call for creek damage inquiry

by Jennifer Chiu

Civic leaders want the state's Environment Protection Agency to investigate if groundwater pumping has devastated a Colac district creek.

Colac Otway Shire councillors have supported Cr Stuart Hart's call for the EPA to assess Yeodene's "Big Swamp", which environmentalists claim has suffered from Barwon Water's pumping of groundwater from a Barwon Downs borefield.

The pumping ensured Geelong had enough water during the drought between 2006 and 2010.

Cr Hart hopes the EPA will declare the swamp a contaminated area due to acid sulphate soils.

The council's representative on a Corangamite Acid Sulphate Soil Multi-agency Steering Committee will also ask the committee to look into the costs and scope of investigating the causes of the acidification.

Council chief Rob Small said the Yeodene peat swamp and Boundary Creek had showed unusual responses to drying out, which played.

"There has been an amount of vegetation affected and it's killed trees," Mr Small said.

"There has also been a long-running peat fire in the area," he said.

Mr Small said the council would request the studies on behalf of community group Land and Water Resources Otway Catchment.

"We'll do whatever's reasonable to try and ensure the issue is understood and not reproduced without some care being taken around it," he said.

"It was an unseen impact because we were in one of the driest periods in a long, long time in this area, so that would have contributed as well."

The council will also ask Southern Rural Water why water released into Boundary Creek fails to reach a gauging station downstream at a Colac-Forrest Road bridge.

Barwon Water interim managing director Joe Adamski said the borefield was a vital water source during drought.

"It will continue to be part of Barwon Water's diversified supply system," he said.

Mr Adamski said Barwon Water was working with other agencies to investigate the region's acid sulphate soils.

He said the water authority would also review its Barwon Downs borefield monitoring program to consider new monitoring methods.

"The review will focus on the ecological and hydrogeological aspects of the borefield operations and look at expanding the current monitoring program," Mr Adamski said.

He said Barwon Water would use the information in the lead-up to an application to renew its operating licence in 2019 and the process would include community consultation.

Cr Stuart Hart

Still no review and definitely no local input asked for.

What is required is the implementation of recommendations going back decades and unless the format of community consultation has undergone a dramatic change this comment instils no confidence..

OUTCOMES OF MOTION 1.

Unfortunately the Corangamite Acid Sulfate Soil Multi Agency Steering Committee (CASSMASC) does not take minutes so it would have been difficult for the Colac Otway Shire representative to move any motions. However, the Shire representative was able to establish a cost for investigating the causes of the Big Swamp's demise.

Subject: RE: Minutes

From: Stewart Anderson (Stewart.Anderson@colacotway.vic.gov.au)

To: otwaywater@yahoo.com.au;

Cc: Jack.Green@colacotway.vic.gov.au; Rob.Small@colacotway.vic.gov.au;

Date: Monday, 3 September 2012 11:11 AM

Hi Malcolm

Council has not taken any samples from the Creek this year because it has not been running when our Environmental Health Officer has gone to the site on a number of occasions. He will be visiting the site again soon and I would expect he would be able to take a sample now given the recent rain.

The Inland Acid Sulphate Soils Steering Committee does not take formal minutes. We take notes that highlight key discussion points and actions that need to be undertaken by committee members. Given that they are not formal minutes the group agreed that the notes would only be circulated to organisations on the committee as a matter of course but they could be made available to other parties upon request with approval by the steering committee.

Accordingly, I will take your request to the next meeting of the group in October and get back to you then.

I have attached the information bulletin prepared by the committee in Autumn 2012 that explains what the committee is doing. Another Bulletin will be done later in the year and I will send you a copy when it is finalised.

Give me a call if you have any questions.

Cheers Stew

"Please consider the environment before printing this email."

Stewart Anderson
Colac Otway Shire
Manager Environment and Community Safety
Phone: (03) 5232 9414
Mobile: 0427 542 653
Fax: (03) 5232 1046
Email: stewart.anderson@colacotway.vic.gov.au
Website: www.colacotway.vic.gov.au

Personal contact late Jan.2013, with Stewart dealt with this and the request is still being processed.

Stewart was, however, able to gain the support of the CASSMASC's to scope out a brief and as a consequence prepared the following contract brief.

Colac Otway
SHIRE

YEODENE PEAT SWAMP INVESTIGATION

CONTRACT

SECTION D

CONTRACT BRIEF

Colac Otway Shire Council
2-6 Rae Street
COLAC VIC 3250
Tel. (03) 5232 9400

Contents

1 SUMMARY

The purpose of this brief is to seek a quote from an appropriately qualified consultant on the costs associated with carrying out an investigation into the cause(s) of the acidification of the "Big Swamp" at Yeodene.

The Big Swamp wetland is located on a section of private land along Boundary Creek in the Otway foothills. During the recent 10 year drought, the peat swamp dried out, resulting in a peat fire and the generation of acid run-off into Boundary Creek. Due to the complexity of managing both the fire and acid sulfate soil related issues, Colac Otway Shire Council has been working with multiple agencies and stakeholders to try to determine what actions should be taken in both the short and mid-term in order to best manage the risks at the Big Swamp.

Possible contributors to the drying out of the peat swamp are:

1. Prolonged drought conditions reducing inflows to the swamp
2. Prolonged drought increasing evaporative losses from the swamp
3. The fire in the swamp, exacerbating its drying out
4. Drainage trenches in the swamp to allow access to the fire by draining the swamp
5. Pumping from the Barwon Downs borefield potentially lowering regional watertables
6. Changes in the catchment land-use / water use
7. Other, undetermined causes

To assist in developing options for ongoing management, the relative contribution of these varying factors to drying out the peat swamp needs to be better understood.

These numbers are referred to later, see page 38.

2 INTRODUCTION

Acid sulfate soils are an emerging environmental issue that government agencies across the country are trying to deal with. Acid sulfate soils occur naturally in coastal and inland areas that are typically waterlogged and rich in iron such as the Big Swamp. Left undisturbed these soils are harmless but if drained, excavated or otherwise exposed to air, the iron sulphides react with oxygen and form sulphuric acid. This release of acid is harmful to aquatic environments and can also trigger the release of heavy metals (particularly aluminium) from the soil that can cause further damage to the environment.

Council first became aware that there were potential acid sulfate soils in the Big Swamp in 2008 due to acidic waters being detected in Boundary Creek. The Corangamite Inland Acid Sulfate Soils Steering Committee was established in 2010 to improve the understanding of current and potential future sites at risk of acidification from inland acid sulfate soils. Southern Rural Water, Colac Otway Shire Council, Corangamite CMA, Barwon Water, Department of Sustainability and Environment, Department of Primary Industries and the Environment Protection Authority are all members of the committee. By working together, these various agencies aim to help the community better manage this complex environmental problem.

The agencies on the steering committee have committed to work together to enhance the regional body of knowledge regarding inland acid sulfate soils within the region. The agencies have engaged La Trobe University to conduct a PhD study into the matter. The aims of the Corangamite Inland ASS Study are to:

- Improve the understanding of current and potential future sites at risk of acidification from inland acid sulfate soils (ASS) within the Corangamite Catchment Management Authority (CCMA) region; and
- Use this information to develop a risk-based management response.

Although the study is not focused on the Big Swamp, this area is a critical part of the Latrobe University study. Through this study it was confirmed that the Big Swamp is an actual acid sulfate site.

The Big Swamp occurs in the outcrop area of the Lower Tertiary Aquifer (LTA). The LTA is used by Barwon Water as an emergency water supply for Geelong during drought. Barwon Water operates the Barwon Downs borefield in accordance with its license conditions issued to them by Southern Rural Water. The prolonged pumping of groundwater water from Barwon Downs during the recent drought drew down the levels in the LTA over a wide area. There is local concern that this has contributed significantly to the drying out of the Big Swamp. In addition it is not clear to what degree the prolonged drought itself and the restriction of surface flows through the construction of farm dams in the surrounding area have contributed to the swamp drying out.

3 PROJECT AIM

The aim of the project is to better understand and quantify the contributions of a range of surface and groundwater catchment processes to the drying out of the Big Swamp.

4 PROJECT OBJECTIVES

The project aim will be achieved by delivering the following core objectives:

- Identify and analyse current sources of relevant information;

- Develop a series of conceptual models for the swamp and based on the information available, short-list the models as more or less likely; and
- Quantify, where possible, or qualitatively evaluate the contributions of different catchment and groundwater actions on the drying out of the Big Swamp.

5 PROJECT METHODS

The project methods are as follows:

1. Review available literature on the Big Swamp and the surface water and groundwater systems within which it occurs;
2. Develop initial conceptual models for the water balance of the Big Swamp;
3. Undertake a site visit, engage key stakeholders/agencies;
4. Refine conceptual models. Complete an initial analysis of the potential contribution of the different components of the model, based on existing information, for the swamp water balance over a wet and dry cycle;
5. Prepare a draft report based on the initial analysis, summarising the outcomes of the initial analysis. Include an evaluation of key gaps, and the information / investigation requirements and estimated costs. A presentation is to be made to the Inland Acid Sulfate Soil Committee in support of the draft report;
6. Undertake a hydrological investigation and analysis of the different water balance components, quantifying the contribution of each to the degree of saturation in the Big Swamp under both wet and dry climate cycles;
7. Provide recommendations for how the water-balance in the Big Swamp could maintain saturation so that acid would not be generated under wet and dry climate cycles; and
8. Provide a final report, including a summary presentation to the Inland Acid Sulfate Soil Committee.

6 Costing for the proposal

The costs for points 1 to 5 of the methodology are to be provided as a lump sum. As part of the proposal, an indicative cost for points 7 to 9 are to be provided, comprising a lower end estimate, best estimate and upper-end estimate. The costings are to include all technical work, site visits, presentations and be inclusive of any additional expenses in support of the project delivery.

Cost Table (Lump Sum):

Item	Description	Cost (excl. GST)	GST
1	Literature review		
2	Initial conceptual models		
3	Site visit		
4	Initial analysis		
5	Draft report		
6	Hydrological investigation and analysis		
7	Develop Recommendations		
8	Final Report		

7 Terms and Conditions

The Colac-Otway Shire standard terms and conditions will apply. Colac-Otway Shire reserves the right to terminate the contract at the end of Task 5. Depending on the nature of the cost for the detailed investigation phase, Colac-Otway Shire may be required to re-tender the project to deliver tasks 7 to 9.

This extract has been taken from the Colac Otway Shire's agenda 19 December 2012 Ordinary Council Meeting, page 105. The above Contract Brief was included as an attachment.

> At the Corangamite Inland Acid Sulfate Soils Steering Committee meeting held on 24 August 2012 Council's representative moved a motion that the committee investigate the cost and scope of investigating the cause(s) of the acidification of the "Big Swamp" at Yeodene. The motion was supported by the committee. Council's representative on the committee developed the scope for the investigation and has sought quotes from suitably qualified agencies. The scope for the investigation is attached to this report. Quotes were sought and obtained from suitably qualified agencies identified through the Corangamite Inland Acid Sulfate Soils Steering Committee. The range of the costs received in these quotes varied from $200,000 to $300,000. It is important to note that these costs are for an investigation that will definitively determine the cause of the acidification. A more basic investigation could be undertaken to get an estimate of the relative importance of the components (climate, pumping, surface water, etc.) that contributed to the site drying out and going acid but it would not determine the cause.

The initial motion proposed by Councillor Hart appeared to be suggesting that the Corangamite Acid Sulfate Soil Multi Agency Steering Committee should be investigating the causes not the Shire. The changed motion also appeared to maintain the onus on the CASSMASC to do the investigating of the cost and scoping out of the investigation looking at the causes of the Acid Sulfate Soils in the Big Swamp. For some reason this did not happen and the Council appeared to be under the impression that it should be responsible, and that the Council would have to provide the $200 000 to $300 000 to do this work. Considering that the CASSMASC had representatives from most if not all state authorities, this CASSMAS committee should have done this work as a matter of course, not placing the Shire in a position having the Shire think it was responsible. As it turned out the Shire is not prepared to provide such finance and the CASSMASC is still maintaining the stance that looking at the cause(s) of the Big Swamp drying out is not part of its brief.

Background Information for the Shire Councillors.

In the background information provided to the Shire Councillors there were some very outlandish statements made. These were also repeated in the attached Contract Brief.

Having read all of this material and being mildly disturbed by its content I attended the December Colac Otway Shire Ordinary General Meeting and asked who had provided this background information to the Shire's environment officer.

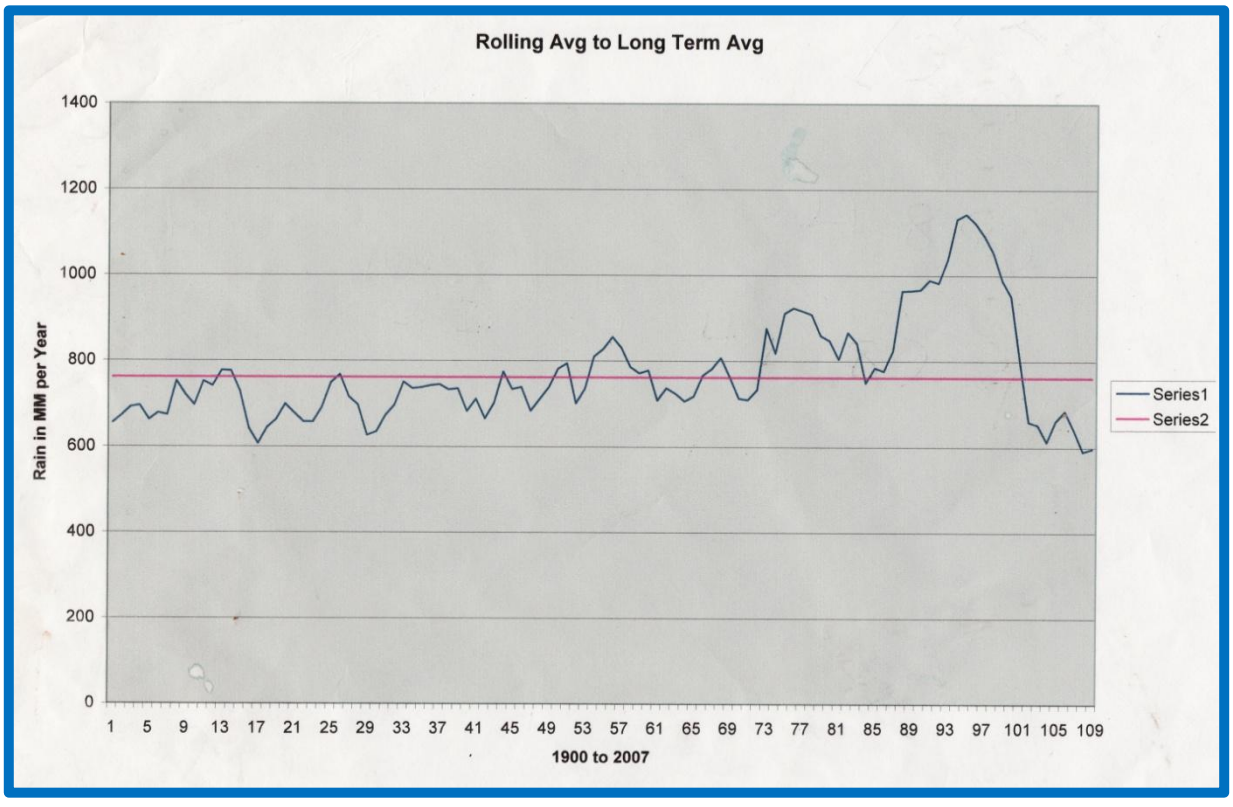
At the January 2013 Colac Otway Shire Ordinary General Meeting this question was asked in question time...

> ***"Could the Council give me some indication when it will have an answer to the question I asked at the December General Council Meeting."***

The reply to this request arrived two days later and is found on pages 40-41.

Page three of the Contract Brief, saying that the peat swamp dried out during the recent 10 year drought and resulted in a peat fire that generated acid runoff into Boundary Creek requires considerable clarification.

- The drought broke in 2010.
- Going back ten years would put the start of the drying out at 2000.
- Going back much further, however, after the 1982-83 drought when Barwon Water pumped up to 50% of Geelong's water supply from the Barwon Downs Borefield there was one of the wettest periods for many years continuing up to 1997.
- Combined with the drought of 1982-83 extractions and a massive stress test pump conducted between 1987-91 Boundary Creek was dry on many occasions during this extremely wet period (see chart below).
- Up until these extractions Boundary Creek had an average daily summer flow out of the Big Swamp of 3.2ML.
- The dry peat in the Big Swamp caught fire for the first time in 1997 after years of



very wet winters.

- The fire smouldered in the dry peat and burnt again causing an extensive and life threatening wildfire in 1998.
- Since 1997 the peat swamp has remained dry up until 2010 when sections of it were flooded in rainfall events.
- However, many sections have continued to remain remain dry since 1997.
- Acid generated in the Big Swamp since 1984 had decimated large tracts of the wetlands.

The 7 dot points on page 3 of the Contract Brief under the heading, "Possible contributors to the drying out of the peat swamp...," cannot be allowed to pass without comment.

Dot Point 1.

True, the drought conditions would have seen less flows into the Big Swamp but the point has to be made that the majority of the 3.2 ML/day summer flow downstream in Boundary Creek originated out of springs from this swamp. Up until 1984 the Big Swamp had maintained a regular and reliable summer flow as far back as 1912.

Dot Point 2.

Yes, there would have been an evaporative loss during the drought. However, it is doubtful that this would have had a significant influence on a 3.2 ML/day discharge from the deep water aquifer.

Dot Point 3.

The swamp would not have caught fire if this 3.2ML/day summer flow had been allowed to continue as it had for decades. Massive groundwater extraction many times greater than the Permissible Annual Volume is the most feasible explanation why the water table has been lowered metres below the discharge points within the Big Swamp (see Yeo 40 hydrograph, pages 13, 14).

Dot Point 4

This is absolute nonsense. No drainage trenches were ever contemplated. The trenches were dug to prevent the spread of fire through the peat and to be filled with water in an attempt to quench the fire. (see pages 79-80 for a comprehensive discussion on this topic).

Dot Point 5.

There is no doubt what so ever that the Barwon Downs Borefield has lowered the regional water tables. To state that "***Pumping from Barwon downs borefield potentially lowering regional watertables***," is another nonsense. This is not a "potential," it is a fact (see pages 8-17).

Dot Point 6.

This is an unsubstantiated statement and falls into the category of urban myth.

Dot Point 7.

The undetermined cause(s) if they exist will never be realised unless a study of the Big Swamp's demise is undertaken. After 5 years of asking seven state authorities for this to be done does not instil any confidence that it ever will be.

Taking into account the above discussion, the following statement in the Contract Brief is surely another nonsense statement.

> ***"To assist in developing options for ongoing management, the relative contribution of these varying factors to drying out the peat swamp needs to be better understood."***

Whatever the factors, they will never be understood until someone, a group, or some authority is proactive enough to fund and implement a study of the cause(s) of the Big Swamp's demise.

Also it would appear from reading the Colac Otway Shire letter below, that the background information contained in Council's "***pre-existing memos***," "***documents that were developed in collaboration with members of the Corangamite Inland Acid Sulfate Soil Steering Committee***" and general information known by the Steering Committee members, requires comprehensive and drastic updating.

Unfortunately, it would appear to me that the Colac Otway Shire is the only state authority willing to pursue the Big Swamp issue with anything close to enthusiasm and proactive action. Without the Shire's persistence and input there would be no Corangamite Inland Acid Sulfate Soil Multi Agency Steering Committee. The shame of all this effort, time and concern shown by the Shire officer Stewart Anderson, is that the other state authorities' representatives appear to know very little about the Big Swamp and can only provide "Mickey Mouse" background information. They may well be "experts," as Stewart states, but unfortunately it would appear that the Big Swamp is not one of their areas of expertise.

Considering that it took two years of constant lobbying from Stewart before the Steering Committee was able to conduct a meeting and considering it has been in operation for the same period of time one can only feel despair for the efforts being made by the Shire. The other members of the Steering Committee; Department of Primary Industries (DPI), the Department of Environment & Sustainability (DSE), Southern Rural Water (SRW), Barwon Water (BW), the Environment Protection Authority (EPA) and the Corangamite Catchment Management Authority (CCMA) need to "lift their game."

Our Ref:
Your Ref:
Contact:

Colac Otway
SHIRE

24 January 2013

Mr Malcolm Gardiner
1805 Colac Lavers Hill Road
KAWARREN VIC 3249

Dear Malcolm,

Questions to Colac Otway Shire Ordinary Council Meetings

Please find below the response to the question taken on notice at the 19 December 2012 meeting of the Colac Otway Shire Council:

1. **With reference to the report on Acid Sulfate Soils and Boundary Creek, who provided the background information upon which the report and the contract brief in the attachments are based?**

In answer to the question regarding the who provided the information contained in the report circulated at the December meeting on Acid Sulphate Soils our Manager Environment and Community Safety advises as follows:

"The simple answer is that I wrote the specifications document. The background information was drawn from pre-existing memos sent to Council and documents that were developed in collaboration with the members of the Corangamite Inland Acid Sulphate Soils Steering Committee.

Once I developed a draft I sent the specifications document out to the members of the Corangamite Inland Acid Sulphate Soils Steering Committee for comment and made changes based on the comments I received from them prior to finalisation.

If Malcolm has a specific question about a certain element of the background I may be able to answer it but if it is about a technical element e.g. the statement: The Big Swamp occurs in the outcrop area of the Lower Tertiary Aquifer (LTA) I would need to talk to one of the other members of the group who has more expertise in these matters."

The answer to the question taken on notice at yesterday's Ordinary Council meeting is as follows:

Colac Otway
SHIRE

1. **Could Council ask their representative on the Corangamite Acid Sulfate Soils Multi-Agency Steering Committee to suggest that formal minutes be taken and that these minutes be made available to the public.**

As CEO, I am not prepared to make a request that more formal minutes be kept at the meeting. This is based on the following advice from the Chairperson of the Committee, Our Manager Environment and Community safety:

"As Malcolm knows the committee does not take minutes. Notes are taken that are focused on what actions will be done prior to the next meeting. This committee is not something that any of us are legally required to do so it is not resourced or conducted in a formal manner. I chair these meetings currently and either I or one of the members will take notes and then I type them up. This is considered an efficient and effective approach. As you know although it is important to make notes of our meetings it is not possible or necessary to have administrative support at all meetings taking detailed minutes.

The committee has discussed the circulation of these notes and although the committee does not want them released to the public as a matter of course we are happy for them to be provided upon request. This was considered appropriate because the notes could be easily misunderstood if read in isolation and so their release may require some extra explanatory notes to be provided alongside them."

I apologise in the delay in providing an answer to the question you raised at the December 2012 meeting and thank you for your patience.

Yours sincerely

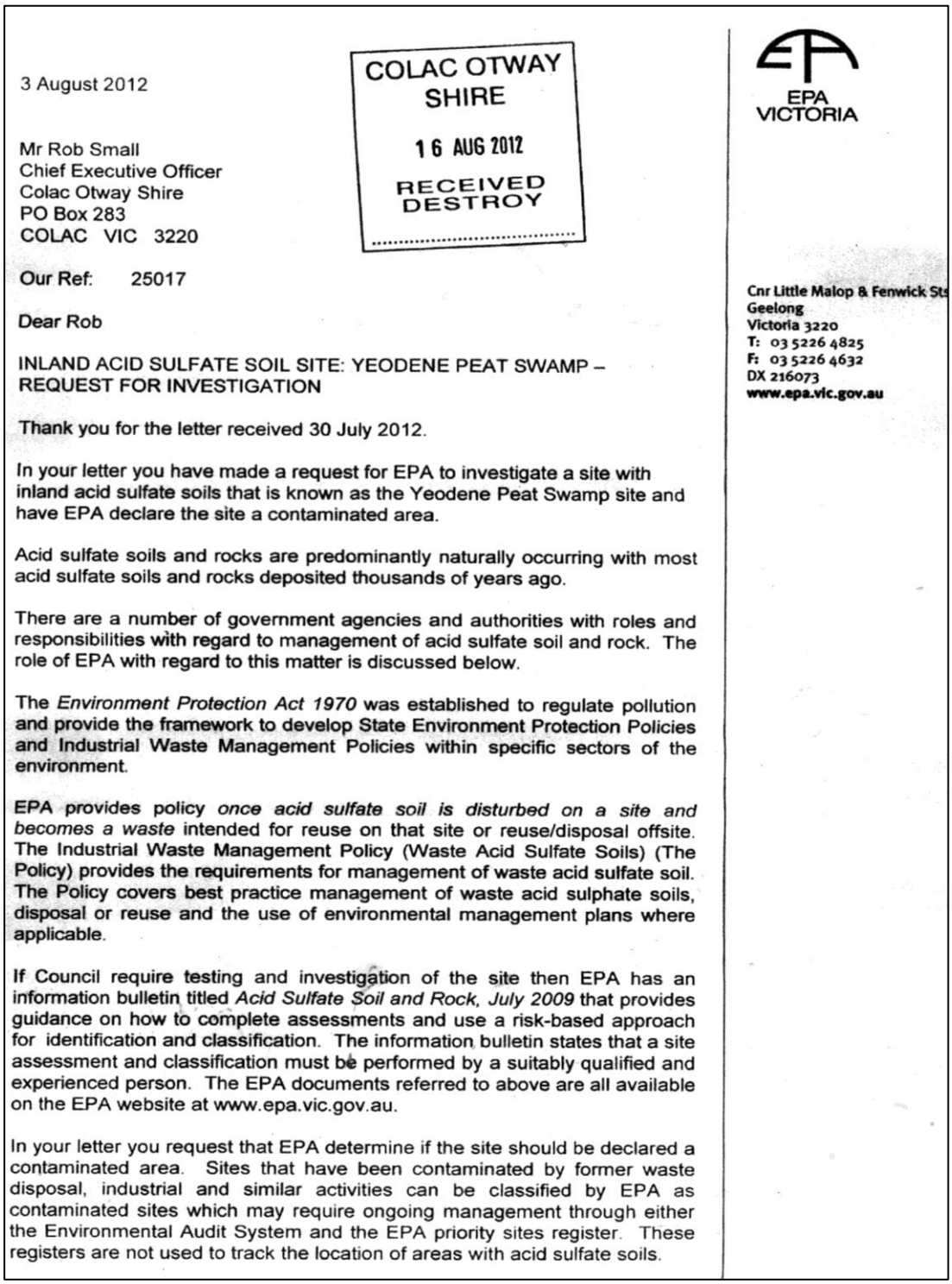
Rob Small
Chief Executive Officer

CC: All Councillors

OUTCOMES OF MOTION 2.

The reply to the Shire asking the EPA to investigate the Big Swamp and to determine whether it should be declared a contaminated site reaffirms earlier replies to such requests made by community members. For example, one of the EPA replies was that it would not look at the site because it had not been declared a contaminated site. Paradoxically it is the EPA that makes such declaration.

The EPA reply to the Shire was of little surprise.



3 August 2012

COLAC OTWAY SHIRE
16 AUG 2012
RECEIVED
DESTROY

EPA VICTORIA

Mr Rob Small
Chief Executive Officer
Colac Otway Shire
PO Box 283
COLAC VIC 3220

Our Ref: 25017

Cnr Little Malop & Fenwick Sts
Geelong
Victoria 3220
T: 03 5226 4825
F: 03 5226 4632
DX 216073
www.epa.vic.gov.au

Dear Rob

INLAND ACID SULFATE SOIL SITE: YEODENE PEAT SWAMP – REQUEST FOR INVESTIGATION

Thank you for the letter received 30 July 2012.

In your letter you have made a request for EPA to investigate a site with inland acid sulfate soils that is known as the Yeodene Peat Swamp site and have EPA declare the site a contaminated area.

Acid sulfate soils and rocks are predominantly naturally occurring with most acid sulfate soils and rocks deposited thousands of years ago.

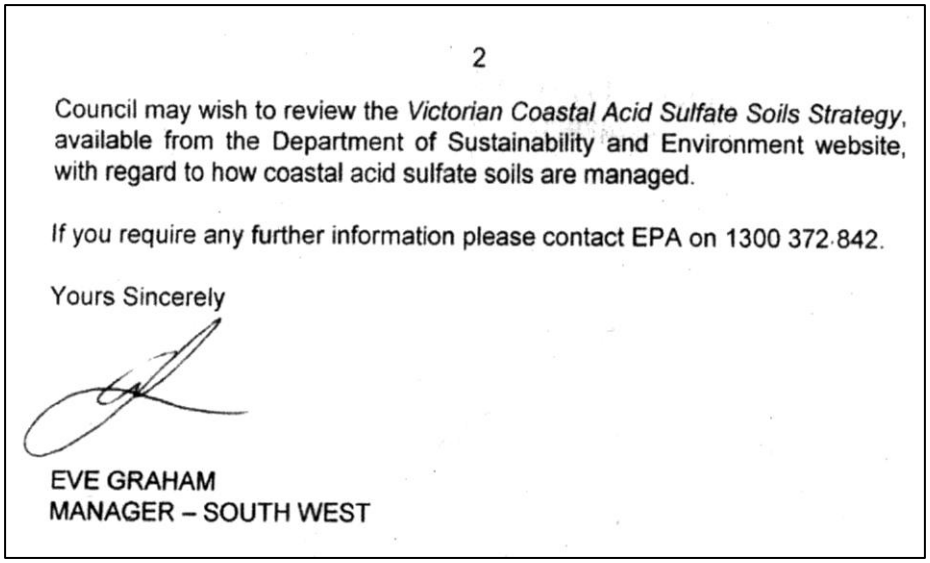
There are a number of government agencies and authorities with roles and responsibilities with regard to management of acid sulfate soil and rock. The role of EPA with regard to this matter is discussed below.

The *Environment Protection Act 1970* was established to regulate pollution and provide the framework to develop State Environment Protection Policies and Industrial Waste Management Policies within specific sectors of the environment.

EPA provides policy *once acid sulfate soil is disturbed on a site and becomes a waste* intended for reuse on that site or reuse/disposal offsite. The Industrial Waste Management Policy (Waste Acid Sulfate Soils) (The Policy) provides the requirements for management of waste acid sulfate soil. The Policy covers best practice management of waste acid sulphate soils, disposal or reuse and the use of environmental management plans where applicable.

If Council require testing and investigation of the site then EPA has an information bulletin titled *Acid Sulfate Soil and Rock, July 2009* that provides guidance on how to complete assessments and use a risk-based approach for identification and classification. The information bulletin states that a site assessment and classification must be performed by a suitably qualified and experienced person. The EPA documents referred to above are all available on the EPA website at www.epa.vic.gov.au.

In your letter you request that EPA determine if the site should be declared a contaminated area. Sites that have been contaminated by former waste disposal, industrial and similar activities can be classified by EPA as contaminated sites which may require ongoing management through either the Environmental Audit System and the EPA priority sites register. These registers are not used to track the location of areas with acid sulfate soils.



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Council may wish to review the *Victorian Coastal Acid Sulfate Soils Strategy*, available from the Department of Sustainability and Environment website, with regard to how coastal acid sulfate soils are managed.

If you require any further information please contact EPA on 1300 372 842.

Yours Sincerely

EVE GRAHAM
MANAGER – SOUTH WEST

Why the EPA recommends that the Council may wish to review the Coastal ASS Strategy is a mystery when the Big Swamp is an Actual Freshwater Inland Acid Sulfate Soil Site. As for the acid sulfate soils in this site being "***predominantly naturally occurring with most acid sulfate soils and rocks deposited thousands of years ago,***" this may be the case. However, the Potential Acid Sulfate Soils (PASS) created in the Big Swamp has been produced, in simple terms, when anaerobic bacteria do their thing in the presence of iron, sulfur and plant matter (usually with a lack of oxygen under saturated conditions). The PASS turns into Actual Acid Sulfate Soils when the aerobic bacteria (oxygen lovers) have their turn. This is indeed is a natural occurrence but anthropogenic activities such as draining a peat swamp like the Big Swamp allows this "natural" process to take place.

The EPA may very well "***provide the framework to develop State Environment Protection Policies***" such as the ones on Groundwater and Surface Water but it appears that no one is responsible for enacting these policies. The following few pages have been extracted from Otway Water Book 17 "*Truth, Honesty & Integrity or the Slippery Dance of the State Authorities*," with a modification or two to highlight the notion that it is probably long past the time when the EPA should be renamed and drop the Environment Protection section from its name.

The responsibilities of the State Authorities that relate to the Big Swamp issues are numerous and fairly well defined but on some issues like the Big Swamp very little is done. If there were officers within the state authorities with any sense of accountability, moral consciousness and commitment to pursue the intention of the policies and guidelines and indeed the "*rules of the game*," then the Big Swamp issue would be quickly and decisively dealt with.

Victorian Auditor General - Contaminated Sites 2011 Report

This report by the Victorian Auditor-General concentrates on the management of contaminated sites and is dated December 2011.[(1)] To understand the relevance to the Big Swamp it is important to qualify and define the term "*contaminated site*." In this report the Auditor-General defines a contaminated site as follows,

"***Contaminated sites are land, and in most cases groundwater, where chemical and metal concentrations exceed those specified in policies and regulations.***"
The Big swamp most definitely qualifies as a contaminated site under this definition. Water tests and acid sulfate soil testing conducted by the Landcare Group, LAWROC, has proven this beyond any doubt.[5][29]
The Victorian Auditor-General's report says that contaminated sites are generally caused by inappropriate management practices. In the Big Swamp scenario there is considerable voice given by the various authorities that the contamination of Boundary Creek, the aquifer and the Big Swamp is a natural occurrence. This may well be the case but until a comprehensive study is undertaken the truth of the matter will not be known. Whether this will ever be done seems quite doubtful after reading the VAG report.
The VAG report includes the following from the cases studied...

1. Applying the regulatory framework for contaminated sites "***Councils and the Department of Planning and Community Development (DPCD) have not applied the regulatory framework as intended***."
2. And the regulatory instruments have been implemented in an ad hoc basis by the EPA and DPCD.
3. The regulatory framework has existed since the 1980s.
4. Also, "***Framework weaknesses have been known for at least 10 years, yet action to systematically address them began only within the last year***."
5. "***The Department of Planning and Community Development (DPCD), the Environment Protection Authority (EPA) and councils are not effectively managing contaminated sites, and consequently cannot demonstrate that they are reducing potentially significant risks to human health and the environment to acceptable levels***."
6. Largely because of the complex regulatory framework this has lead to "***...a lack of accountability and responsibility, and subsequent inaction.***"
7. "***In this audit we identified a range of cases that demonstrated the adverse consequences that flow from a lack of accountability and clarity, and gaps in the framework. Most notably we identify cases of inaction by responsible entities in dealing with contamination; this inaction being driven in part by an undue emphasis on avoiding legal and financial liability, rather than protecting human health and the environment***."

Cases studied demonstrated...

1. Inaction
2. Inconsistent interpretation and application of the framework by councils and the DPCD
3. Councils have shown a lack of vigour in applying their own internal systems and processes
4. Responsibility is neither clearly defined nor accepted by any entity.
5. There are around 100 entities involved in regulating and managing contaminated sites.
6. However, the responsible entities have been neither proactive nor systematic in categorising the nature and extent of contaminated sites.

Possible Human health risks

1. "***Human health risks range from minor health problems, such as allergic reactions and hypersensitivity, to serious health problems, such as cancer, respiratory illness, reproductive problems and birth defects***."

Possible Environmental risks

1. "...***degradation of soil, water and air quality and impact upon their uses***."
2. "***Contamination of groundwater can prevent it from being used for drinking, irrigation or stock supplies...can impact upon plant growth...odours making recreational areas unsuitable, or even affecting the way a place looks by degrading the aesthetic values of an area***."

Managing Contaminated Sites

1. "***Councils, the EPA and DPCD are the key public sector entities responsible for the management of contaminated sites***."
2. "***The EPA is responsible for regulating known contaminated sites***..."
3. One mechanism that the EPA uses to manage and reduce the risk to human health and the environment is "...***investigating contamination in all sites that come to its attention, to determine if further action is required***."
4. "***However, there is no agency responsible for oversight of the system in relation to sites that are known to be contaminated and where the risks to human health and the environment may be long-term rather than imminent***."

If one did not know any better it could be mistakenly taken that the Victorian Auditor-General's report on contaminated sites was describing and had used the Big Swamp site as its major contaminated case study. Otway Water Book 14 deals specifically with human and environmental impacts.

The Environment and Protection Authority's Responsibilities.

If the Victorian Auditor-General's report is to be believed it seems quite clear cut that the very least the EPA should have done was to initiate an investigation of the Big Swamp site three years ago when the EPA was first notified that the Big Swamp was a possible contaminated site. But true to the VAGs report on contaminated sites, the EPA has shown a lack of accountability, inaction and responsibility to be proactive implementing policy to reduce the risks to human health and the environment.

From the investigations and audit that the VAG conducted it would appear that the EPA has a key responsibility to manage the Big Swamp contaminated site. It is also evident that the EPA could instigate an Environmental Audit (EA) of this site under the Environment and Protection Act.

An "***Environment Audit must follow relevant EPA environmental audit guidelines and standards, and undertake sampling and analysis of soil, and possibly groundwater, surface water and air***."[(1)]

In the case of the Big Swamp and as part of the Environmental Audit it would be wise to include a Hydrogeological Assessment (EPA document Number 668). A formal request to this effect was sent to the EPA 29 November 2011. Gaining no reply after several reminders copies of the initial email an Express Post (CV2689294) was sent. An email was received stating that a reply would arrive before 13 January 2012.

The following letter arrived 19 January 2012.

EPA VICTORIA

Our Ref: MA005457

Mr Malcolm Gardiner
Kawarren
1805 Colac Laver Hill Road
KAWARREN
VIC 3249

Lvl 3, 200 Victoria Street
Carlton
Victoria 3053
GPO Box 4395
Melbourne Victoria 3001
T: 1300 EPA VIC
F: 03 9695 2610
DX 210082
www.epa.vic.gov.au

Dear Mr Gardiner

Big Swamp AIASS Site

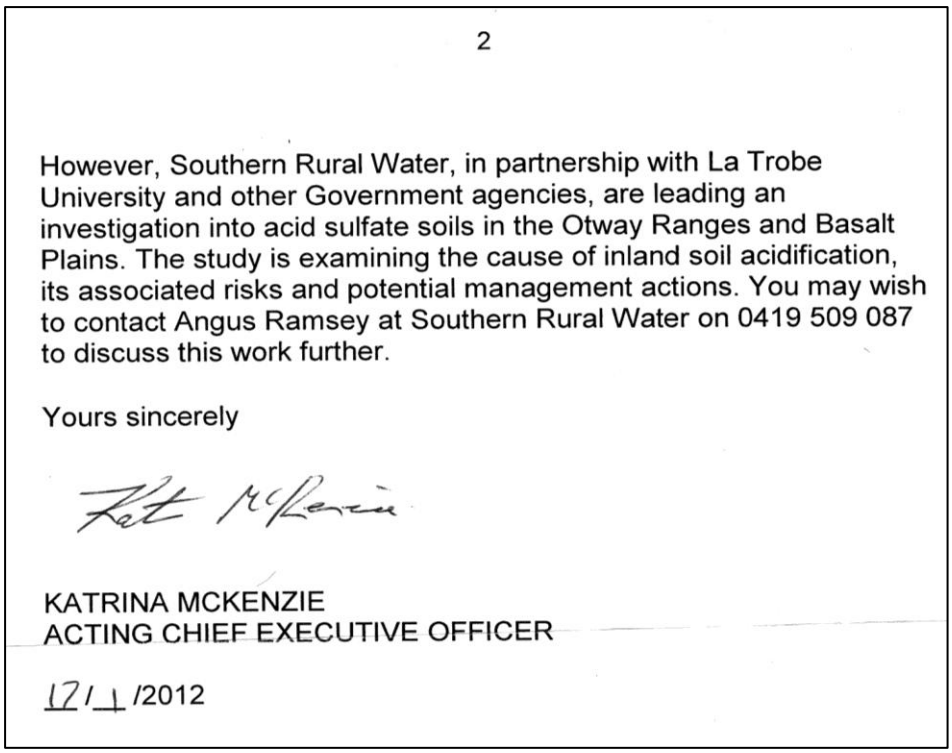
Thank you for your email of 29 November 2011, and follow up emails on 28 December and 13 January, about EPA's management of acid sulfate soils.

The Ombusdman's office is correct in his conclusion that EPA deals with "the handling of waste acid sulfate soils being moved and deposited elsewhere". Our responsibilities are outlined in the Industrial Waste Management Policy (Waste Acid Sulfate Soils) (1999), made under the *Environment Protection Act 1970* (the Act).

Your correspondence queries the application of EPA Publication 668, *Environmental Auditing – Hydrological Assessment (Groundwater Quality) Guidelines* (the Guidelines). The Guidelines provide support for environmental auditors, engineers and consultants, outlining the recommended process for conducting a hydrological assessment. The Guidelines do not impose obligations on EPA to conduct assessments in particular circumstances.

You suggest that section 27A of the *Environment Protection Act 1970* places on EPA "a responsibility to act if a person causes or permits an environmental hazard". This interpretation is incorrect. Section 27A creates an indictable offence, including for "causing or permitting an environmental hazard". Where sufficient evidence exists that an individual has caused or permitted an environmental hazard, EPA may seek to prosecute under this provision. Typically, a prosecution of this nature is in relation to the dumping of industrial waste or a pollution event. Examples of such prosecutions can be found in media releases on EPA's website at www.epa.vic.gov.au/about_us/news.asp.

Finally, you request that EPA instigate an environmental audit, including hydrological assessment, of Big Swamp. The environmental audit system is designed to assess environmental risk, including where land and groundwater contamination has occurred, often in relation to industrial sites. EPA statutory tools, including pollution abatement notices, works approvals and licences, may require a land owner or proponent to conduct an environmental audit to demonstrate risks are being managed to an appropriate level. These circumstances are not applicable to Big Swamp and accordingly, EPA has no plans to require an audit or other assessment.



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However, Southern Rural Water, in partnership with La Trobe University and other Government agencies, are leading an investigation into acid sulfate soils in the Otway Ranges and Basalt Plains. The study is examining the cause of inland soil acidification, its associated risks and potential management actions. You may wish to contact Angus Ramsey at Southern Rural Water on 0419 509 087 to discuss this work further.

Yours sincerely

KATRINA MCKENZIE
ACTING CHIEF EXECUTIVE OFFICER

17/1/2012

To say that there is not an environmental risk and that land and groundwater pollution has not occurred in the Big Swamp is an absolute nonsense, especially so when extensive documentation has accompanied the formal complaints sent to the EPA.

Once again the EPA seemed to be throwing the problem back to the complainant rather than evaluating, investigating and being proactively looking at the issue as a possible EPA concern. The initiative of working out how the EPA should go about being involved in such a serious problem should not be the responsibility of a community group or resident.

An email was sent to Angus Ramsey of Southern Rural Water, asking is it true that the La Trobe University study is looking at the cause(s) of the Actual Inland Acid Sulfate Soils problem in the Big Swamp. The reply to this, 20 January 2012 1:31 PM, states...

> "Is it true - Partly?
>
> As you would be aware, the multi agency committee has engaged the La Trobe Uni to undertake a study to identify and research inland acid sulphate soils (IASS) in the Corangamite Region.
>
> A part of the study will be looking into the possible underlying or root causes of why there is the existence of IASS at a site and determine whether it is a potential or actual site and its implications.
>
> I must stress that it is a regional study being undertaken by an educational body and not an in depth investigation by an authority into any one particular identified IASS site."

The brief and aim of the multi agency committee (CIASSMASC) do not include looking at the cause(s) of any Actual Inland Acid Sulfate Soil site(s) found. On the same day that the email was sent to Angus the following letter was written and sent in reply to Katrina's EPA letter.

Malcolm Gardiner
Vice President LAWROC Landcare
1805 Colac Lavers Hill Road
Kawarren
Vic 3249
ph (03) 52 358 325
www.otwaywater.com.au
otwaywater@yahoo.com.au
Date 19-01-2012

Landcare Victoria

Katrina McKenzie
Acting Chief Executive Officer
EPA Victoria
GPO Box 4395 Melbourne
Victoria 3001

Dear Katrina,
EPA Ref: MA005457 Regarding the Big Swamp AISS Site.

Thank you for your letter of 17-01-2012.

I have had a few discussions with members of the Corangamite Inland Acid Sulfate Soils Multi Agency Steering Committee and persons involved in the La Trobe University study and am under the impression that the causes of any AIASS problems in the Big Swamp are not part of the brief. Bearing this in mind and the fact that no one has determined the cause of the contamination of the land and groundwater I would have thought that this falls under the responsibility of the EPA.

Efforts over the last three years to get the EPA to do this may have been "sloppy" and referral to certain sections of the Environment and Protection Act may have been misguided but that has only come about because of the inaction of your Authority. Surely the EPA has to be proactive and do something constructive aiming at the very least to determine the causes of this problem. As you put it, "*The environmental audit system is designed to assess environmental risk, including where land and groundwater contamination has occurred.*"

I would have thought that all of the material supplied to the EPA would have established that there was a potentially environmental and human health risk involved with the contamination of the Big Swamp site and as a consequence becomes the EPA's responsibility. Is this not so? Does the EPA investigate sites when there is a distinct possibility that it is contaminated and has the potential to be an environmental risk?

Further to the emails I first sent in November 2011 the EPA has not answered my query the name of a person within the EPA that deals with Acid Sulfate Soils. If this could be answered I would appreciate it.

Yours sincerely,

Malcolm Gardiner.
c.c. to the Hons. Greg Barber/Terry Mulder/Ryan Smith/Peter Walsh & the VAGO.

This lack of involvement in the contaminated site of the Big Swamp is even more disappointing and confusing if the following statements found on the EPA web site are to be believed (as at 22 November 2011).

"***EPA administers the Environment Protection Act 1970, which provides the basis for protecting our water environments from pollution***."

"**How EPA protects the water environment**
EPA helps to protect Victoria's water environments through mechanisms including environmental laws, policies and regulatory controls, and by working in partnership with Victorian communities, including businesses, government, individuals and groups."

"State Environment Protections Policy (Waters of Victorian)
The State Environment Protection Policy (Waters of Victoria) sets the framework for government agencies, businesses and community to work together, to protect and rehabilitate Victoria's surface water environments."
There are numerous EPA publications listed on the EPA website providing clear and specific direction how the water environments can be protected or rehabilitated.

In the EPA Annual Plan 2011-2012[9] page 14, it discusses the EPA's accountability to Government. This further emphasises how easy it is to write the words, words that have very little relationship to reality and on the ground actions.

"Statutory activities and environmental protection
The purpose of these activities is to protect, care for and improve beneficial uses of the environment...that ensures:

- ***Beneficial uses of water are protected...***
- ***Contamination of land and groundwater is prevented***..."

And the EPA 5 Year Plan 2011-2016[8] contains more of the same. Lots of huff and puff and more of the same AND definitely no EPA action on the B**ig Swamp**.

As with the Corangamite Acid Sulfate Soil Multi Agency Steering Committee, the EPA readily throws responsibility back on the Shire. Why the Shire prepared the Contract Brief (as shown above) and not the Steering Committee, and why the EPA suggests that if the Shire wishes to identify and classify the Big Swamp all that the EPA can do is provided information bulletins, policy documents and websites, is most baffling. But, it is abundantly clear that the EPA is adamant that the Big Swamp is not in any way its responsibility.

Not to be deterred the Colac Otway Shire through its CEO made another attempt to involve and gain some positive action from the EPA.

900

Colac Otway
SHIRE

8 January 2013

John Merritt
Chief Executive Officer
EPA Victoria
GPO Box 4395
MELBOURNE VIC 3001

Dear John

Inland Acid Sulfate Soil - Yeodene Peat Swamp and Boundary Creek

I refer to your letter on the above subject of 3 August 2012 and received in this office on 16 August 2012 from Eve Graham, Manager, South West.

Council at its meeting on 19 December 2012 considered your response. The delay in reporting this matter to Council was caused by a delay in receiving a similar response from Southern Rural Water.

The critical issue around this matter has been the acidification of the Yeodene Peat Swamp and the area of Boundary Creek adjacent to the swamp area.

While I accept that you do not consider it appropriate to declare the area as contaminated, there certainly is a matter of environmental degradation which needs to be examined.

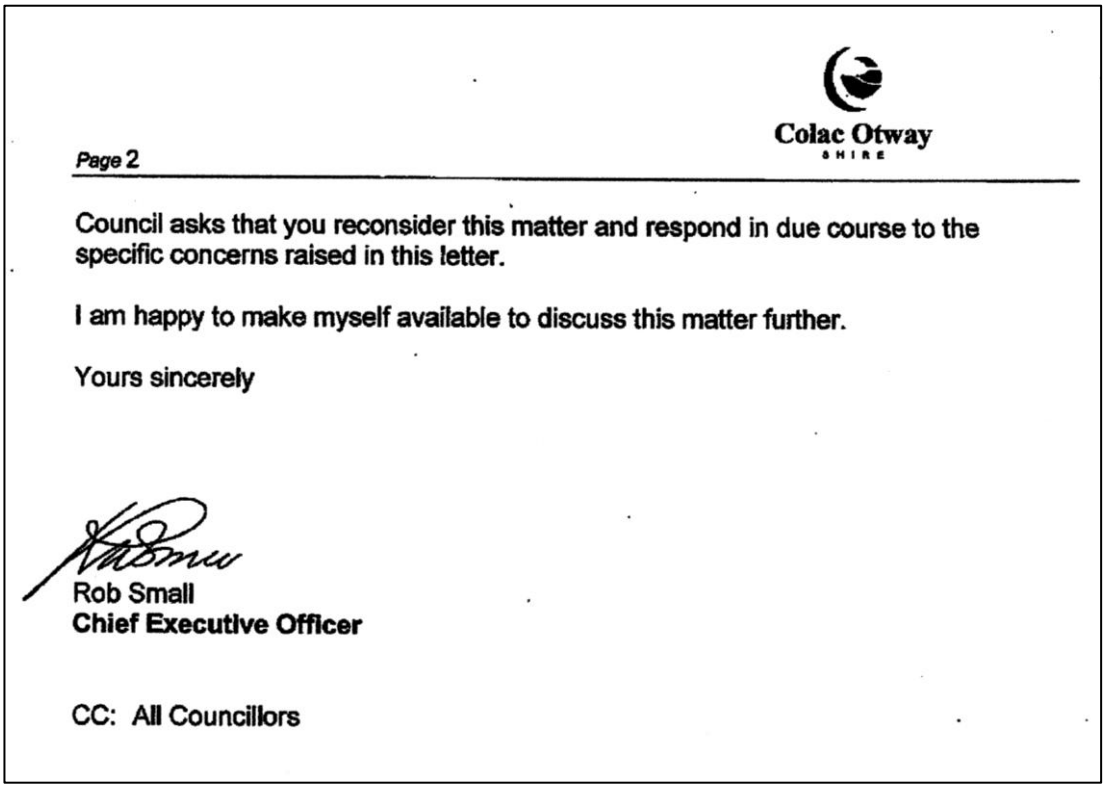
Council has asked me to raise this issue further with you. Their view is that not enough has been done to examine the causes of this issue and to put in place mitigation strategies to address future occurrences. Council sees this as an obligation of the State Government agencies rather than local government. In that light, your directing of the analysis methodology back to Council is inappropriate. It is not our function to examine these issues.

Council is strongly of the view that the likelihood that the pumping of the Barwon West aquifer by Barwon Water has contributed to this issue. Given that the demand to pump water from the Barwon aquifer is possible, if not highly likely, in the future, Council wants some assurance that the agencies responsible for control and management of environmental issues related to this are meeting their obligations to proactively work towards mitigating future impacts of such activities. They also seek assurances that State Government agencies are acting in our community's interests.

Colac Otway Shire
PO Box 283
Colac Victoria 3250
www.colacotway.vic.gov.au
inq@colacotway.vic.gov.au

Colac Service Centre
2-6 Rae Street
Colac Victoria 3250
Ph: (03) 5232 9400
Fax: (03) 5232 1046

Apollo Bay Service Centre
69-71 Nelson Street
Apollo Bay Victoria 3233
Ph: (03) 5237 6504
Fax: (03) 5237 6734



Colac Otway
SHIRE

Page 2

Council asks that you reconsider this matter and respond in due course to the specific concerns raised in this letter.

I am happy to make myself available to discuss this matter further.

Yours sincerely

Rob Small
Chief Executive Officer

CC: All Councillors

Unfortunately the EPA reply below is more of the same, yes it is noted that not enough has been done to identify the causes of the Big Swamp's demise and yes it will continue to support the work of the Corangamite Inland Acid Sulfate Soil Steering Group.

Unfortunately the Corangamite Inland Acid Sulfate Soil Steering Committee is not looking at the causes or key drivers of the Big Swamp's demise. Neither is anyone else.

How a risk based management strategy can be developed when the causal factors of a problem are not known is most mystifying.

NOTE: This steering committee has many names, including
Corangamite Inland Acid Sulfate Soils Multi Agency Steering Committee,
Corangamite Acid Sulfate Soils Steering Committee,
Corangamite Inland Acid Sulfate Soil Steering Group,
Corangamite Inland Acid Sulfate Soils Working Group,
Corangamite Acid Soil Committee, and
as time goes on it will probably gain some more titles and mixtures of the above.

Our Ref: MA005862

COLAC OTWAY SHIRE
1 - FEB 2013
RECEIVED
DESTROY

Mr Rob Small
Chief Executive Officer
Colac Otway Shire
PO Box 283
COLAC VIC 3250

EPA VICTORIA

Lvl 3, 200 Victoria Street
Carlton
Victoria 3053
GPO Box 4395
Melbourne Victoria 3001
T: 1300 EPA VIC
F: 03 9695 2610
DX 210082
www.epa.vic.gov.au

Dear Mr Small

Inland Acid Sulfate Soil - Yeodene Peat Swamp & Boundary Creek

Thank you for your letter of 8 January 2013 regarding inland acid sulfate soil – Yeodene Peat Swamp and Boundary Creek.

EPA notes council's concern that not enough has been done to examine the cause of the issue and put mitigation strategies in place.

In response, EPA will continue to support the work of the Corangamite Inland Acid Sulfate Soils Steering Group, whose aim is to gain a better understanding of inland acid-sulfate soils in the Corangamite area and develop a risk based management response.

This Steering Group, formed in 2009, consists of multi-agency representatives including the Department of Sustainability and Environment, Environment Protection Authority, Corangamite Catchment Management Authority, Department of Primary Industries, Colac Otway Shire, Barwon Water and Southern Rural Water.

This group has developed a research partnership with LaTrobe University to undertake some background research on this issue, including a study of Warrion Groundwater area and Yeodene peat swamp. This study is currently underway.

Through the completion of this work, EPA and the Steering Group will be more informed as to the risks and management strategies required to manage acid sulfate soils in the Corangamite area.

Yours sincerely

MATT VINCENT
ACTING CHIEF EXECUTIVE OFFICER

30/1/2013

Victoria

OUTCOMES OF MOTION 3.

Southern Rural Water was asked why the supplementary water that is released from the Otway to Colac Pipeline does not reach the stream flow gauging station that is located downstream of the Big Swamp. The reply to the Council's request is as follows...

Southern Rural Water
Managing Water. Serving Communities.

29 October 2012

COLAC OTWAY SHIRE
29 NOV 2012
RECEIVED
DESTROY

Rob Small
Chief Executive Officer
Colac Otway Shire
PO Box 283
COLAC VIC 3250

Received 5 months after the June Council meeting.

Dear Rob

Release of water into Boundary Creek

Thank you for your letter of 24 July 2012 regarding the release of water into Boundary Creek.

Barwon Water holds a licence that allows for the extraction of groundwater from the Gerangamete Groundwater Management Area (GMA) for the purpose of urban supply. Groundwater is a costly supply option and is typically relied on during dry periods when surface water supplies are falling and the Greater Geelong region is on water restrictions. This principle is in Barwon Water's water resource planning model to determine the periods when the borefield should be operated.

The licence has extensive conditions balancing protection of the aquifer and the systems dependent on it against critical human needs, particularly during drought. The licence has detailed monitoring conditions. Trigger levels require increased intervention depending on the level of decline. These include an immediate reduction in the maximum pumping rates, an initiation of the review process and increased monitoring.

Clause 6 of the licence relates to Boundary Creek and is a response to groundwater-surfacewater interaction and the protection of private rights along the creek The full clause is :

6. FLOW IN BOUNDARY CREEK

6.1 General

B. Barwon Water must provide a flow of 2 ML/d to the headwaters of Boundary Creek from any time that groundwater extraction commences under this Licence until:
a. the groundwater level in bore YEO 40 (Bore ID 109131) recovers above a level of 158.5m AHD following the cessation of pumping; or

88 Johnson Street Maffra Victoria, 3860 | Post Office Box 153 Maffra Victoria, 3860 | Phone 1300 139 510 Fax (03) 5139 3150 | srw@srw.com.au www.srw.com.au | DX 217245 ABN 70 801 473 421

b. *at any time between 1 June and 30 November the natural flow at the Yeodene stream gauge exceeds 1 ML/d.*

It should be noted that this clause applies whether or not Barwon Water are extracting groundwater. This means that supplementary water has been pumped into the creek although the bore field has not been used since 2010 SRW regularly monitors compliance of this licence condition, which includes investigations when a complaint is received.

The supplementary water is not pumped. It is gravity fed.

We are not aware of a non-compliance with this licence condition; however SRW did investigate stream flows not reaching the gauging station in January and February this year.

We found that the pipe connecting the supply and Boundary Creek was being maintained. Barwon Water had found an alternative supply of water during the maintenance program however it was intercepted in a private dam and, due to a communication problem, was not immediately passed through.

The private dam owner did not gain any advantage from this and after considering all the circumstances SRW did not pursue legal action.

More generally there is a question about the impact on Boundary Creek from the prolonged drought, groundwater extraction and the efficacy of the 2 ML input by Barwon Water. SRW is in discussions with Barwon Water concerning the ongoing operation of the current licence, and the process leading up to the renewal of the licence. Matters for further investigation will include the impact of pumping and climate variations on the creek, whether the 2ML or some other volume is appropriate and whether the water could be provided at some other location on the creek. There will also be extensive community consultation and we will be pleased to keep council informed of this.

In the meantime the monitoring will continue to inform the way the licence is managed and provide important data for making future decisions.

If you have any further enquiries regarding this matter, feel free to call me on 1300 139 510.

Yours sincerely

CRAIG PARKER
General Manager Groundwater & Rivers

The bulk of this letter has nothing to do with answering the specific question of where does the supplementary water disappear to.

It is curious how the issue of non-compliance arose and how and why SRW focussed on the months of January and February as though this was the only time period of concern. The query asked why the supplementary waters do not reach the Stream Flow Gauging Station on Boundary Creek, Yeodene.

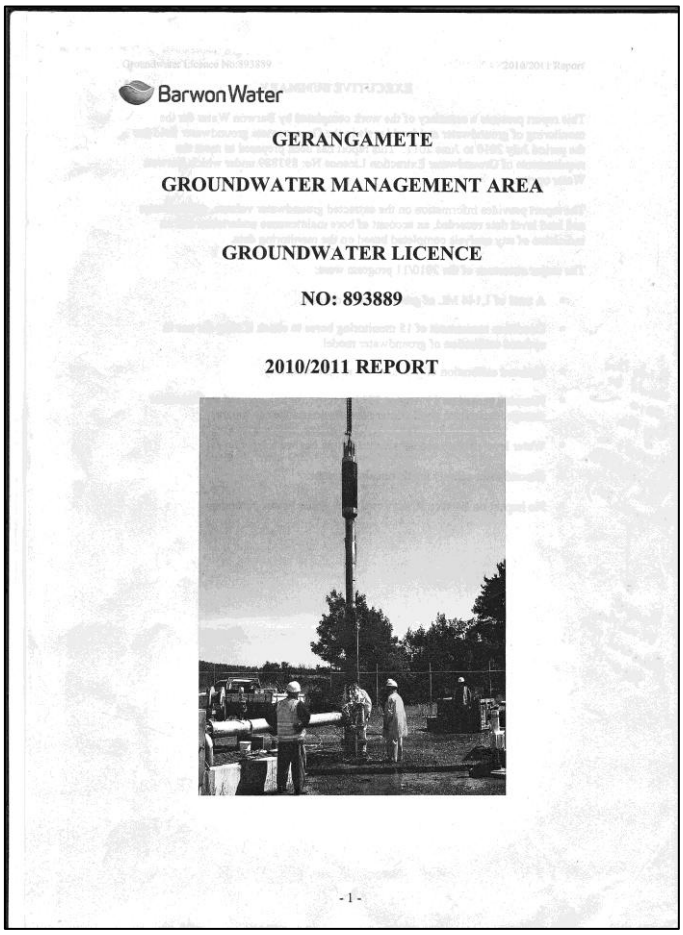
Hopefully the Shire did not suggest that there should be legal action taken, and as for the other proffered information this is interesting but still did not answer the question why the water disappears before it reaches the gauging station.

An example of this can be seen in the graph on page 14 that clearly shows that the 2 ML/day (**pink** line) disappears before reaching the stream flow gauging station (**blue** line) for several months. Since 1984 there have been over 1300 days of 2ML/day releases with no flows at the stream flow gauging station. To focus on just two months is ludicrous and the Council query requires a much better explanation from Southern Rural Water than the one that has been given in the letter proffered above.

Despite the efforts of the Colac Otway Shire there would appear to be a refusal by the EPA to become involved in the Big Swamp issue; a reluctance by Southern Rural Water to answer a simple and straight forward question, and a definite lack of local knowledge and background information exhibited by the Corangamite Inland Acid Sulfate Soil Multi Agency Steering Committee.

CHAPTER FOUR
Appendix F

For each financial year since July 2004 Barwon Water has been required to submit a report to Southern Rural Water on the Barwon Downs Borefield by the first of September. This particular chapter refers to the 2010-2011 and 2011-2012 reports.



Barwon Water

GERANGAMETE

GROUNDWATER MANAGEMENT AREA

GROUNDWATER LICENCE

NO: 893889

2010/2011 REPORT

-1-

Boundary Creek a tributary of the Barwon River, Victoria was reported as having an average daily summer flow of 3.2 ML. In the next summer following the drought of 1982-83 when Barwon Water extracted 50% of Geelong's water supply Boundary Creek (see page 5 Stream Flow Gauging Station) stopped flowing. A family with records going back to 1912 claimed this was the first time this had happened. In the struggle to have the relationship between Boundary Creek running dry and groundwater extraction days of no flow have become very important.

Early in 2012 when looking at summer flows in Boundary Creek the 2010-2011 Barwon Water groundwater report was referred to. A graph in this report indicated that Boundary Creek had very few if any days of no flow. On reflection this appeared to be improbable and raised some anxiety. When looking for the actual data in the 2010-11 report it became apparent that Appendix F had not been included. Up until this time it had not been noticed

that Appendix F containing the data was missing. Consequently, a request was sent to Barwon Water asking for the missing appendix.

In the mean time the VIC WATER Data, Department of Sustainability and Environment website, was accessed and totals for the 2010-2011 summer period were calculated. These figures indicated that Boundary Creek had indeed had many periods of summer flow. In fact my personal diary confirmed that the summer of 2010-2011 had many rainfall flushing episodes.

However, when Appendix F arrived there appeared to be considerable differences between the VIC WATER Data website and that written up by Barwon Water. Bearing in mind the multitude of problems with earlier reports this was not a surprise. A letter was sent to Justin Franklin of Barwon Water asking for some clarification.

Malcolm Gardiner
Vice President LAWROC Landcare
1805 Colac Lavers Hill Road
Kawarren
Vic 3249
ph (03) 52 358 325
www.otwaywater.com.au
otwaywater@yahoo.com.au

Landcare
Victoria

Date 13-04-2012
Justin Franklin
Barwon Water
Geelong. 3220

Dear Justin,
Could you please look into why the Barwon Water Stream Flow Gauging data for the gauge No. 233228 as stated in the Gerangamete groundwater reports to SRW, differs to that found for the same site on the Vic Water Data web site?

Regards,
Malcolm.

Having very limited success in the past approaching Southern Rural Water, the Water Ombudsman, the State Ombudsman and Barwon Water over similar instances it was no surprise that a reply hadn't been received in a reasonable time and this incident was simply filed away.

When visiting the Environment Defender's office I happened to call into Mr. Greg Barber's MLA (Northern Metropolitan), office and spoke about the differences in the two sets of data. This prompted Greg to ask the Minister for Water some clarification on irregularities in the reporting of matters by Barwon Water to Southern Rural Water.
In this particular case Greg's adjournment matter included the following:

> ***Finally, appendix F in the latest report 2010-11, contains data for flows in Boundary Creek at the Yeodene stream flow gauge no 233228 that vary considerably from the data on the Vic Water data website for the same gauging station for the same period.***

I request that the minister follow up these irregularities…" **Tuesday 1 May 2012**. Around the same time that the Water Minister gave his reply this letter arrived from Barwon *Water.*

Barwon Water

Our Ref: **F000272**
Your Ref:
Enquiries To: **Tony Overman**

30 May 2012

Malcolm Gardiner
1805 Colac Lavers Hill Road
Kawarren
VIC 3249

Dear Sir

Re: Barwon Water stream flow gauging data for site 233228

I refer to your letter of April 13th, 2012 regarding the difference in stream flow data on the Vic Water website compared to that submitted by Barwon Water as part of our annual reporting to Southern Rural Water.

Unfortunately an administrative error was made in our report as the September data was included in both the September and October columns. There is also a day's lag between the two data sets as Vic Water data (via Thiess) assigns the flows from the database using a different method to Barwon Water.

The minor differences in daily flows are attributable to the equipment checks and data adjustments Thiess have made following their monthly inspection of the site. The data in Barwon Water's report is directly from the on-site monitoring system.

We will make the necessary adjustments to align our methods with Vic Water for future reports.

Yours faithfully,

WBuchanan

William Buchanan
Acting Manager
Water Supply

Barwon Region Water Corporation
ABN 86 348 316 514

61-67 Ryrie Street, Geelong Victoria 3220
PO Box 659 Geelong Victoria 3220 TEL 1300 656 007 FAX +61 3 5221 8236

www.barwonwater.vic.gov.au

Strangely the discrepancies I was concerned about were in the January, February, March period. I had not even noticed that the figures for September and October were identical. Data adjustments may have accounted for minor differences but any equipment adjustments should have been reflected equally in both sets of data.

The Water Minister's reply to Greg Barber mirrored the same tale as did The Barwon Water letter.

> ***"The Boundary Creek flow data at Yeodene stream flow gauge 233228 in Appendix F of the 2010/11 report is the same for the months of September and October. This was Barwon Water's mistake which was not picked up by SRW."***
> (How refreshing. This is the first time in 30 years experience dealing with these water issues that anyone has acknowledged that Barwon Water has made a mistake.)
> The Minister's reply continues with:
> ***"There is also a day's lag between the two data sets. This has occurred because BW data assigns the flows from the database using a different method from that used by Thiess, the state's monitoring contractor, to upload data to the Vic Water data base. BW will align its methods with Thiess' to avoid this confusion in future. There are also minor differences in the daily flow data. These are attributed to equipment checks and data adjustments made by Thiess following monthly inspection of the site. BW on the other hand uses the raw data taken directly from the on-site monitoring system."*** **Peter Walsh MLA – Minister for Water.**

The day's lag in recording data has never created a problem in calculations and is simply accounted for by moving one set of data one day to match the other set.
Any other discrepancies that I had noted were dismissed as "*minor differences."*

Between 1 January 2011 and 18 March 2011 the Vic Water Data set states that 724.99 ML flowed past the stream flow gauging station No. 233228. Barwon Water's Appendix F states that 746.113 ML flowed past this same point in the same period.
Averaged out over the 77 days the Barwon Water data set would amount to an extra 274 323 litres a day difference – a minor difference?

Considering that the Water Minister and Barwon Water deal in such huge volumes of water perhaps a discrepancy of over 270 000 litres a day for 77 days is classed as a minor. Paradoxically, around this same period Melbourne Water and the State Government were campaigning with the aim that each Melbournian use only 150 litres water a day, total.

However, the story does not end there. The Colac Herald was approached with the 270 000 litres a day discrepancies and has been waiting for a reply from Southern Rural Water ever since – approximately 5 months. When approached by the Colac Herald, Barwon Water was happy to maintain these figures if Southern Rural Water had no complaint. During this

waiting period and after the Colac Herald approached SRW and Barwon Water for comment regarding the summer figures being disputed, the following emails were exchanged.

-----Original Message-----
From: Malcom Gardiner [mailto:otwaywater@yahoo.com.au]
Sent: Friday, 24 August 2012 11:28 AM
To: Tony Overman
Subject: Water data

Hi Tony,
In the 2010-11 Report you sent to SRW on the Gerangamete Borefield the Appendix F data had some major discrepancies with the DSE Vicwater data for the same summer period. I was wondering whether SRW has queried this data?

Irrespective of their efforts does Barwon Water intend to investigate these discrepancies and resolve or explain the differences.

Kind regards,
Malcolm.
Sent from my iPad

From: Tony Overman <Tony.Overman@barwonwater.vic.gov.au>
Date: 27 August 2012 11:45:31 AEST
To: 'Malcom Gardiner' <otwaywater@yahoo.com.au>
Subject: RE: Water data

Malcolm,
The discrepancies you refer to were discussed with SRW. They arose due to slight differences in the methods used for data collation by Barwon Water and Thiess. SRW have advised they have investigated the matters and determined they are of an administrative nature and are not considered to be a non-compliance with the intent of the licence conditions or the licence itself. Barwon Water will align its methods with Thiess in future to avoid any confusion.
Regards,
Tony

Tony Overman
Strategy & Sustainability Coordinator | Barwon Water
61-67 Ryrie Street | P.O. Box 659, Geelong, Victoria 3220
T: (03) 5226 2416 | F: (03) 5223 1716 | M: 0439 577 394| W: www.barwonwater.vic.gov.au

At no stage has there been any mention that this discrepancy should be classed as anon-compliance. What is being questioned is the number of "administrative errors" that occur. Firstly how Barwon Water can make them and secondly how Southern Rural Water can miss picking up such errors. A bigger concern is that data is not corrected when challenged and consequently remains an inaccurate historical record. It is important that data be accurate and correct if at some stage a study is ever conducted into the management and connectedness between the Barwon Downs Borefield and the demise of the Big Swamp.

But perhaps this is being overly concerned. The Minister for Water and Barwon Water gave assurances that Barwon Water would align its data recording with the Vic Water data that is collected by Thiess.

In summary, 13 April 2012, Barwon Water first alerted to the fact that its data differed to the Vic Water Data Base for the same gauging station.

These Assurances were Given.

- **30 May 2012**, William Buchanan, Barwon Water (see page 58). ***""We will make the necessary adjustments to align our methods with Vic Water for future reports."***
- **Late May**, early June 2012, Minister for Water Peter Walsh (MLA) (see page 59)
- **27 August 2012**, Tony Overman Barwon Water (see page 60)

The 2011-2012 Report.

The 2011-2012 Barwon Downs Borefield reporting period ended on the 30 June 2012. Barwon Water then had 60 days (1 September 2012, 3 months since the first assurance was given) to prepare and submit this report to Southern Rural Water during which time there is considerable opportunity for dialogue and any modification to take place between these two bodies before the report is finalised (see page 72 ★). I gained a finalised copy of this report in November 2012 and would have expected the assurances given to have been implemented.

Having had many bad experiences involving broken promises and failed assurances I thought it prudent to compare the next Gerangamete/Barwon Downs Borefield 2011-2012 Appendix F data sheet with the Vic Water Data Base. The data set examined was for the period 1 May 2012 to 30 June 2012.

Both lots of data have been included in the following pages. For the period 1 May to around 13 May 2012 there appeared to be no flow at the Stream Flow Guaging Station 233228 at Boundary Creek Yeodene. From 14 May 2012 I have added the Barwon Water Appendix F data onto the Vic Water data sheet for comparison (see page 64).

Appendix F Barwon Water Report to SRW 2011-2-12

Flows in Boundary Creek at Yeodene Stream Gauge 233228 (ML/day)

Date	July-11	August	September	October	November	December	January	February	March	April	May	June-12
1	4.6	8.1	2.7	7.4	0.6	2.5	0.0	0.0	0.0	0.0	0.0	3.1
2	3.8	6.9	2.6	18.5	0.7	2.2	0.0	0.0	0.0	0.0	0.0	2.9
3	3.8	6.3	2.4	12.3	0.7	1.8	0.0	0.0	0.0	0.0	0.0	3.7
4	4.4	5.9	2.2	7.6	0.5	1.3	0.0	0.0	0.0	0.0	0.0	8.8
5	10.7	6.9	1.8	5.3	0.4	0.9	0.0	0.0	0.0	0.0	0.0	14.6
6	28.0	15.1	1.6	4.3	0.4	0.6	0.0	0.0	0.0	0.0	0.0	11.6
7	50.1	15.6	2.3	3.5	0.3	0.4	0.0	0.0	0.0	0.0	0.0	6.6
8	37.1	11.3	2.9	4.2	0.3	0.3	0.0	0.0	0.0	0.0	0.0	4.6
9	20.4	9.5	4.1	9.4	0.7	0.3	0.0	0.0	0.0	0.0	0.0	4.0
10	18.5	9.5	5.2	7.1	0.9	0.2	0.0	0.0	0.0	0.0	0.0	3.8
11	30.8	9.5	6.5	5.4	3.8	0.2	0.0	0.0	0.0	0.0	0.0	3.6
12	25.2	8.9	7.9	4.5	5.3	0.2	0.0	0.0	0.0	0.0	0.0	3.3
13	23.1	7.3	8.2	3.7	3.3	0.1	0.0	0.0	0.0	0.0	0.0	3.2
14	29.4	5.9	6.7	3.0	2.3	0.1	0.0	0.0	0.0	0.0	0.0	3.1
15	20.8	5.8	5.5	2.8	1.9	0.1	0.0	0.0	0.0	0.0	2.7	3.4
16	15.0	8.7	4.5	2.6	1.3	0.0	0.0	0.0	0.0	0.0	2.5	3.4
17	12.0	25.2	3.8	2.1	0.9	0.0	0.0	0.0	0.0	0.0	2.2	4.2
18	13.1	49.4	3.2	1.7	0.7	0.2	0.0	0.0	0.0	0.0	1.9	5.2
19	16.8	30.6	2.9	1.5	1.5	0.2	0.0	0.0	0.0	0.0	1.8	6.9
20	16.2	21.2	3.7	1.1	2.5	0.2	0.0	0.0	0.0	0.0	1.8	6.1
21	17.1	14.9	4.8	0.8	1.8	0.2	0.0	0.0	0.0	0.0	1.7	7.7
22	52.2	10.7	6.6	0.6	1.1	0.2	0.0	0.0	0.0	0.0	1.7	11.5
23	36.9	7.9	5.5	0.4	0.7	0.2	0.0	0.0	0.0	0.0	1.9	16.0
24	23.1	6.1	4.0	1.2	0.5	0.2	0.0	0.0	0.0	0.0	2.1	12.8
25	32.1	4.9	3.1	1.5	0.4	0.1	0.0	0.0	0.0	0.0	4.4	9.8
26	30.3	4.1	2.6	1.0	0.9	0.1	0.0	0.0	0.0	0.0	8.0	9.0
27	23.2	3.6	2.2	0.8	3.6	0.1	0.0	0.0	0.0	0.0	8.9	8.6
28	17.2	3.2	2.0	0.7	4.4	0.2	0.0	0.0	0.0	0.0	5.8	8.5
29	12.7	3.1	2.4	0.9	3.8	0.1	0.0	0.0	0.0	0.0	4.4	8.6
30	10.1	2.9	3.2	0.7	3.0	0.1	0.0		0.0	0.0	3.8	8.7
31	8.8	2.9		0.6		0.0	0.0		0.0		3.4	
Total	647.57	331.89	116.81	117.30	49.06	13.14	0.10	0.00	0.00	0.00	58.90	207.21

Release to Boundary Creek (ML/day)

Date	July-11	August	September	October	November	December	January	February	March	April	May	June-12
1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.3	2.1	2.2	2.1	2.1
2	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.3	2.1	2.2	2.1	2.1
3	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.3	2.1	2.2	2.1	2.1
4	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.1	2.1
5	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.2
6	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1
7	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1
8	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.2	2.1	2.1
9	2.0	2.0	2.1	2.1	1.9	2.1	2.1	2.1	2.1	2.3	2.0	2.1
10	2.0	2.0	2.1	2.1	1.9	2.1	2.1	2.1	2.1	2.3	2.0	2.1
11	2.0	2.0	2.1	2.1	1.9	2.1	1.9	2.1	2.1	2.3	2.0	2.1
12	2.0	2.0	2.1	2.1	1.9	2.1	1.9	2.1	2.2	2.3	2.0	2.1
13	2.0	2.0	2.1	2.1	1.9	2.1	1.8	2.1	2.2	2.3	2.0	2.1
14	2.0	2.0	2.1	2.1	1.9	2.0	2.1	2.1	2.1	2.2	2.1	2.1
15	2.0	2.0	2.1	2.1	2.0	2.0	2.1	2.1	2.2	2.1	2.1	2.1
16	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.2	2.1	2.1	2.1
17	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.1	1.1	2.1	2.1
18	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.1	0.0	2.1	1.1
19	2.0	2.0	2.1	2.1	2.1	2.0	2.2	2.1	2.1	0.0	2.1	0.0
20	2.0	2.0	2.1	2.1	2.1	2.0	2.2	2.1	2.1	0.0	2.1	0.0
21	2.0	2.0	2.1	2.1	2.1	2.0	2.2	2.1	2.1	0.0	2.1	0.0
22	2.0	2.0	2.1	2.1	2.0	2.0	2.1	2.1	2.1	0.0	2.1	0.0
23	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.1	0.8	2.1	0.0
24	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.1	1.8	2.1	0.0
25	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	0.0
26	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	0.0
27	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	0.0
28	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.1	0.0
29	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.1	0.0
30	2.0	2.0	2.1	2.1	2.1	2.1	2.1		2.2	2.1	2.1	0.0
31	2.0	2.0		2.1		2.1	2.1		2.2		2.1	
Total	62.00	62.00	62.53	65.20	61.00	64.14	64.84	61.61	65.92	52.05	64.80	37.06

Non Compliance	November 9-10 - possible blockage in pipe as release setting was not altered. January 11-13 - possible blockage in pipe as release setting was not altered. April 17-24: Colac Pipeline shut down for renewal and repair works. Unable to release.
Releases	Releases from McDonald's dam into Boundary Creek while pipeline shut down for further renewal works.

Site Information

Site Code	233228		
Site Name	BOUNDARY CREEK @ YEODENE		
Begin Date	01-May-2012	End Date	31-May-2012

Summary Table

	Site Name	Measure	Date	Value	Unit	Contractor	Quality Flag
1	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	01-May-2012 00:00:00	0.000	ML/Day	THIESS	
2	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	02-May-2012 00:00:00	0.000	ML/Day	THIESS	
3	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	03-May-2012 00:00:00	0.000	ML/Day	THIESS	
4	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	04-May-2012 00:00:00	0.000	ML/Day	THIESS	
5	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	05-May-2012 00:00:00	0.000	ML/Day	THIESS	
6	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	06-May-2012 00:00:00	0.000	ML/Day	THIESS	
7	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	07-May-2012 00:00:00	0.000	ML/Day	THIESS	
8	BOUNDARY CREEK @	AVERAGE DAILY FLOW	08-May-2012 00:00:00	0.000	ML/Day	THIESS	

	YEODENE	(COMPUTED)					
9	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	09-May-2012 00:00:00	0.000	ML/Day	THIESS	
10	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	10-May-2012 00:00:00	0.000	ML/Day	THIESS	
11	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	11-May-2012 00:00:00	0.000	ML/Day	THIESS	
12	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	12-May-2012 00:00:00	0.000	ML/Day	THIESS	Barwon Water
13	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	13-May-2012 00:00:00	0.000	ML/Day	THIESS	Append. "F"
14	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	14-May-2012 00:00:00	0.305	ML/Day	THIESS	0.0
15	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	15-May-2012 00:00:00	1.413	ML/Day	THIESS	2.7
16	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	16-May-2012 00:00:00	1.281	ML/Day	THIESS	2.5
17	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	17-May-2012 00:00:00	1.107	ML/Day	THIESS	2.2
18	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	18-May-2012 00:00:00	0.943	ML/Day	THIESS	1.9
19	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	19-May-2012 00:00:00	0.907	ML/Day	THIESS	1.8
20	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	20-May-2012 00:00:00	0.888	ML/Day	THIESS	1.8
21	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	21-May-2012 00:00:00	0.815	ML/Day	THIESS	1.7

22	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	22-May-2012 00:00:00	0.827	ML/Day	THIESS	1.7
23	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	23-May-2012 00:00:00	0.950	ML/Day	THIESS	1.9
24	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	24-May-2012 00:00:00	1.047	ML/Day	THIESS	2.1
25	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	25-May-2012 00:00:00	2.379	ML/Day	THIESS	4.4
26	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	26-May-2012 00:00:00	4.591	ML/Day	THIESS	8.0
27	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	27-May-2012 00:00:00	5.289	ML/Day	THIESS	8.9
28	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	28-May-2012 00:00:00	3.199	ML/Day	THIESS	5.8
29	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	29-May-2012 00:00:00	2.344	ML/Day	THIESS	4.4
30	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	30-May-2012 00:00:00	1.992	ML/Day	THIESS	3.8
31	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	31-May-2012 00:00:00	1.785	ML/Day	THIESS	3.4

Even the most cursory of glances at these data sets confirms that nothing has changed. The data reported by Thiess and Barwon Water do not match; Southern Rural Water have once again failed to scrutinise the report adequately; the assurances given that this would not happen again have been broken and discrepancies of up to 4 million litres a day difference cannot be ignored. Sorry, yes they can be ignored and on past performances will most likely continue to be so long into the future.

Site Information

Site Code	233228		
Site Name	BOUNDARY CREEK @ YEODENE		
Begin Date	31-May-2012	**End Date**	30-Jun-2012

Summary Table

	Site Name	Measure	Date	Value	Unit	Contractor	Quality Flag
1	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	31-May-2012 00:00:00	1.785	ML/Day	THIESS	3.4
2	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	01-Jun-2012 00:00:00	1.652	ML/Day	THIESS	3.1
3	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	02-Jun-2012 00:00:00	1.536	ML/Day	THIESS	2.9
4	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	03-Jun-2012 00:00:00	1.946	ML/Day	THIESS	3.7
5	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	04-Jun-2012 00:00:00	5.321	ML/Day	THIESS	8.8
6	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	05-Jun-2012 00:00:00	10.391	ML/Day	THIESS	14.6
7	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	06-Jun-2012 00:00:00	7.635	ML/Day	THIESS	11.6
8	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	07-Jun-2012 00:00:00	3.675	ML/Day	THIESS	6.6

9	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	08-Jun-2012 00:00:00	2.449	ML/Day	THIESS	4.6
10	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	09-Jun-2012 00:00:00	2.096	ML/Day	THIESS	4.0
11	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	10-Jun-2012 00:00:00	2.003	ML/Day	THIESS	3.8
12	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	11-Jun-2012 00:00:00	1.891	ML/Day	THIESS	3.6
13	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	12-Jun-2012 00:00:00	1.759	ML/Day	THIESS	3.3
14	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	13-Jun-2012 00:00:00	1.688	ML/Day	THIESS	3.2
15	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	14-Jun-2012 00:00:00	1.651	ML/Day	THIESS	3.1
16	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	15-Jun-2012 00:00:00	1.799	ML/Day	THIESS	3.4
17	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	16-Jun-2012 00:00:00	1.780	ML/Day	THIESS	3.4
18	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	17-Jun-2012 00:00:00	2.258	ML/Day	THIESS	4.2
19	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	18-Jun-2012 00:00:00	2.812	ML/Day	THIESS	5.2
20	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	19-Jun-2012 00:00:00	3.832	ML/Day	THIESS	6.9
21	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	20-Jun-2012 00:00:00	3.375	ML/Day	THIESS	6.1
22	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	21-Jun-2012 00:00:00	4.382	ML/Day	THIESS	7.7

23	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	22-Jun-2012 00:00:00	7.511	ML/Day	THIESS	11.5
24	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	23-Jun-2012 00:00:00	11.776	ML/Day	THIESS	16.0
25	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	24-Jun-2012 00:00:00	8.730	ML/Day	THIESS	12.8
26	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	25-Jun-2012 00:00:00	5.992	ML/Day	THIESS	9.8
27	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	26-Jun-2012 00:00:00	5.314	ML/Day	THIESS	9.0
28	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	27-Jun-2012 00:00:00	5.018	ML/Day	THIESS	8.6
29	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	28-Jun-2012 00:00:00	4.975	ML/Day	THIESS	8.5
30	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	29-Jun-2012 00:00:00	4.990	ML/Day	THIESS	8.6
31	BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	30-Jun-2012 00:00:00	5.067	ML/Day	THIESS	8.7

During the period 14 May 2012 to 30 June 2012 Barwon Water figures taken from Appendix F, 2011-2012 Report states 266.11ML flowed past the Boundary Creek Stream Flow Gauging Station No. 233228. For the same period the Vic Water Data Base states that 157.366ML passed this point.

This is a difference of ***108.744 mega-litres*** or if averaged out is ***2,265,500 litres*** a day.

Perhaps Minister Walsh, Tony Overman and William Buchanan should have said that things take a little while to be remedied and that the equipment checks, data adjustments, alignment of data uploads, better scrutiny for administrative errors and the necessary adjustments to align the two methods of management will be made in the 2012-2013 report, not the 2011-12 report. This may have made some sense.

But how things can be so dissimilar when Barwon Water and Thiess collect the same data from the same gauging station using the same recorder is most baffling. A friend and colleague, Charles Kohout, with a background in mathematics had a cursory glance at the figures for May and June 2012 and came up with what appears to be a possible solution.

A (Vic Water Data) + B (Vic water data) approximately = C (Barwon Water data

OR A + B ~ C

Where, A = a flow reading taken from the Vic Water Data Base on any given day
B = the next day's reading from the Vic Water Data Base, and
C = Barwon Water's flow data for the same day that the flow rate for A is taken.

For example...

1. 8 June 2012 of 2.449ML (Vic Water) + 9 June of 2.096ML (Vic Water) = 4.545 & approximately equals Barwon Water's flow for 8 June 2012 of 4.6ML
2. 9 June 2012 of 2.096 + 10 June 2012 of 2.003 = 4.099 approximately equals Barwon Water's 9 June 2012 of 4.000.

or put simply

1. 2.449 + 2.096 = 4.545 ~ 4.600
2. 2.096 + 2.003 = 4.009 ~ 4.000

BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	09-Jun-2012 00:00:00	2.096	ML/Day	THIESS	4·0
BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	10-Jun-2012 00:00:00	2.003	ML/Day	THIESS	3·8
BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	11-Jun-2012 00:00:00	1.89	ML/Day	THIESS	3·6
BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	12-Jun-2012 00:00:00	1.759	ML/Day	THIESS	3·3
BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	13-Jun-2012 00:00:00	1.688	ML/Day	THIESS	3·2
BOUNDARY CREEK @ YEODENE	AVERAGE DAILY FLOW (COMPUTED)	14-Jun-2012 00:00:00	1.651	ML/Day	THIESS	3·1

This extremely high correlation where by the Barwon Water flow rate is the accumulation of two Vic Water Dater Base flows, is present in all of the May and June data sets for 2012.

Is this what is meant by ..."***using a different method...***"?

As the flow rates in the Vic Water Data Base get higher the correlation of close to 100% drops but still remains very strong.

The Minister for Water and Southern Rural Water are very quick to point out that Barwon Water is compliant with the licence conditions and as a consequence this seems to excuse any other issue. However, it is most evident that Southern Rural Water is not fulfilling its role as regulator and Barwon Water appears to be a poor manager and administrator of the Barwon Downs Borefield operation. A frightening question would be how long has this type of mis-management and lack of scrutiny been happening and in what other areas of the Barwon Downs Borefield operation have similar incidents gone undetected.

Despite what Minister Walsh says it would appear that the Liberal/National Party have had serious concerns in regard to water resource management for some time, and...

Minister Walsh's political party when in opposition leading up to the 2010 State elections had this to say...

September 2010...*"Put simply the Government does not have the skills to manage ` groundwater in the state effectively."*

Considering, that this Appendix F issue involves the connectedness between surface-water, groundwater and supplementary flows, it would appear that nothing has changed since Minister Walsh's party took office.

Historical data needs to be corrected, better management practices implemented and an immediate review of the Licence conditions should be conducted.

CHAPTER FIVE
Multiple Cones of Depression

February 2013. Summary of attempts to have the multiple cones of depression explained.

Mid 2010 I was lead to believe that there could only be one cone of depression when there is only one borefield tapping an aquifer system and that the lowest point in this depression would be directly under the borefield.

26-08-2010 Barwon Water sent its "Groundwater Licence 893889 – 2009/10 Report" into Southern Rural Water with this comment in the covering letter...

> "***I would be pleased to meet and discuss the attached report and clarify any matters that need to be addressed***." (Barwon Water Ref: F000272/A2069242. SRW Ref: 00893889).

30-09-2010 Following a phone call a copy of the 2009/10 Gerangamete Groundwater Licence Report was mailed to me.

> "***Further to your phone message, please find attached Gerangamete Groundwater Management Area: Groundwater Licence 893889 – 2009/10 report***."

1-12-2010 Southern Rural Water held a Warrion Aquifer groundwater night in the COPACC building in Colac. I believe that Angus Ramsey and Elissa McNamara undertook to investigate the multiple cones of depression query posed to them. It was my understanding that Elissa said there was no possibility of multiple cones and that Barwon Water would be involved in discussion to seek out an answer to this concern.

14-12-2010 By email I asked Michael Watson of Barwon Water...

> "***If there have been any updates on the Gerangamete Groundwater Management Area Groundwater Licence No. 893889 – 2009/10 report, could I please have a copy of these, please***?" No reply.

18-01-2011 Another email was sent to Michael and contained this...

> "***Has there been any changes to the Gerangamete Borefield 2009/10 report that was sent to Southern Rural Water, since you sent me a copy of this report. In other words once the report was scrutinised by SRW did any changes have to be made***?"

8-02-2011 As was often the case a lack of reply prompted the sending of a Freedom Of Information (FOI) request asking for... "...***all documents that relate to any modifications made to***.." the 2009/10 report.

10-02-2011 An email reply to the 18 January email arrived and part of this had this to say...

> "...***and we are still awaiting Southern Rural Water comments and feedback on the Barwon Downs Licence Report and as such it is still in draft for amendment***." It is assumed that this is referring to the report sent to SRW in August was the draft.

However, a copy was sent to me in September 2010 and there was no hint that the report was still in draft form.

9-03-2011 The reply to the FOI request from Barwon Water said this...

"***In response to your Freedom of Information request, I have been advised that there have been no documents created or modified in regard to the original "Gerangamete Groundwater Management Area Groundwater Licence No 893889 2009-2010 report" sent to Southern Rural Water***." (Barwon Water Ref: F070311/33925)

13-05-2011 Email to Angus (SRW) asked for the outcome of querying Barwon Water over the cones of depression.

16-05-2011 Angus replied stating that Elissa had been involved in a bad accident and any reply would have to await her recovery.

19-07-2011 Email to Angus...

"Have there been any documents created or modified in regard to the original "Gerangamete Groundwater Management Area Groundwater Licence No 893889, 2009-2010 report."?

29-05-2011 Email reminder including a copy of the earlier email was sent off to Angus.

1-08-2011 Angus replied apologising for the delay and was looking into the request and needed to check with Info Services and he stated that it may need to go through the FOI process.

12-08-2011 Email sent...

"Has there been any progress on any updates on the Gerangamete report, with Info Services?"

25-08-2011 Angus rang and left a message, personal contact was then attempted and an email was sent asking Angus for a written reply.

26-08-2011

Subject: RE: Barwon Water Report 2009-10

From: Angus Ramsay (AngusR@SRW.com.au)

To: otwaywater@yahoo.com.au;

Date: Friday, 26 August 2011 3:52 PM

Malcolm,

I know of no additional annual reports or any amendments made that SRW has received from BW on the operation of the borefield on the 2009-10 season.

The document that I referred to was a response doc from SRW to BW on the 2009-10 annual report, its data and the changes or clarifications to be made in the next annual report.

This strictly will require an FOI request as it is not within the realms of a "public doc" and this is the advice that I have received from Info Services.

You are also correct in that the next annual report is being prepared as we speak and we have already had one of our regular briefings with BW last week.

I also apologise as I said that I would be available but I have been stuck in a management meeting all day.

Regards

Angus Ramsay

Field Supervisor West | Southern Rural Water

Managing Water. Serving Communities.

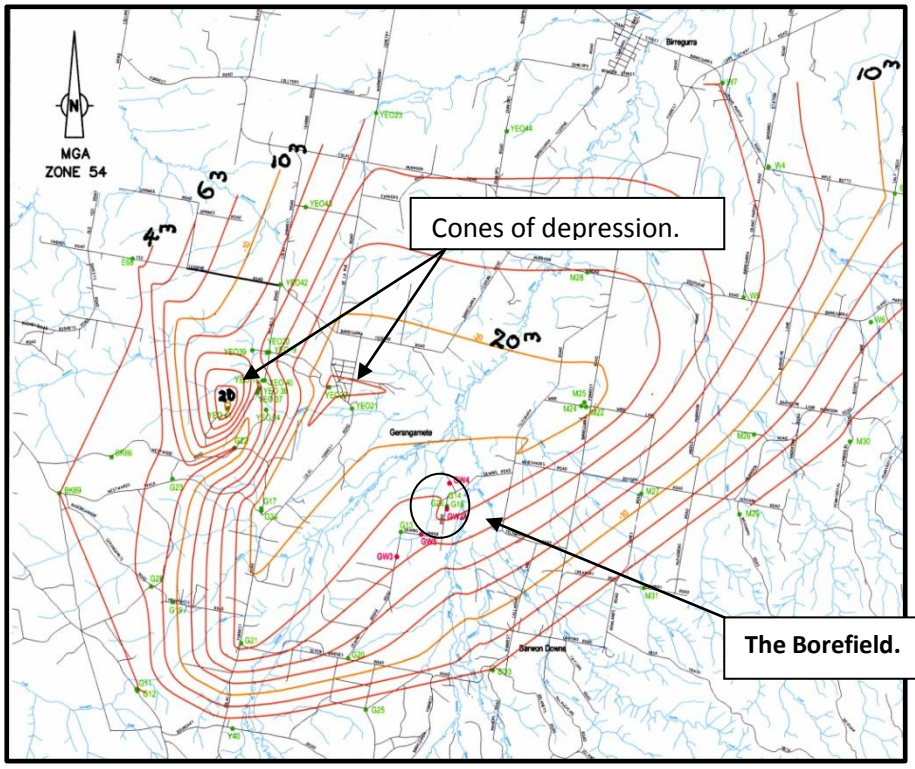
September 2011 The 2010-2011 Gerangamete report was released and the residual drawdown map had multiple cones of depression.

Any further pursuit of this issue was shelved for the time being, little was being achieved.

However, on **Tuesday 1 May 2012** in the Legislative Council, MLA Water Minister Walsh was also asked to comment on the multiple cones of depression in the Barwon Water annual reports sent to Southern Rural Water on the Gerangamete Borefield.
His reply is most interesting...

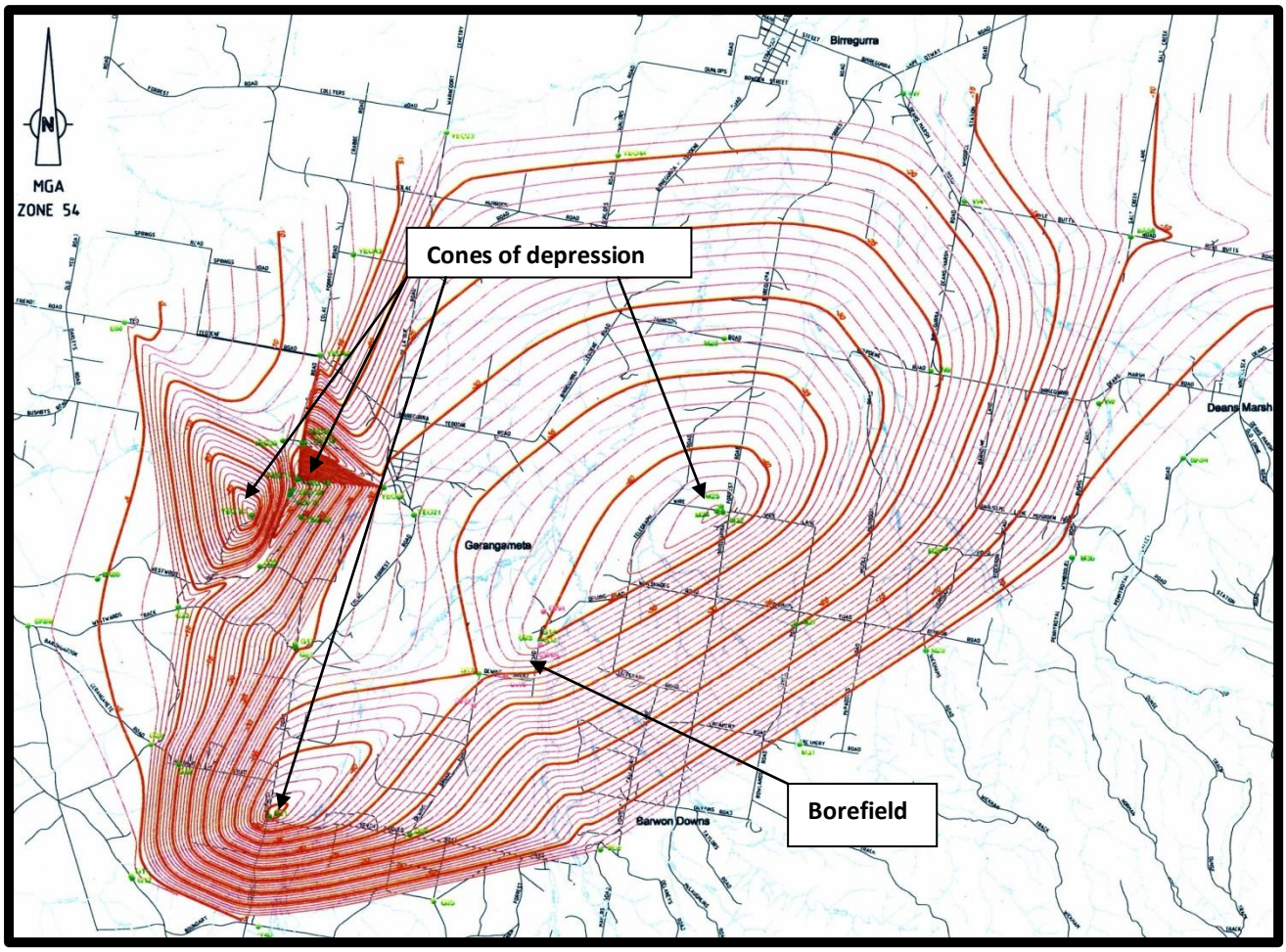
> ***Multiple cones of depression on the relative residual draw down maps***
>
> **It is correct that you would expect to see only a single cone of depression on the relative residual drawdown maps in the annual reports from 2004/05 to 2010/11. This would be the large regional cone of depression directly under the borefield which is consistent with the predicted draw down.**
>
> **The second cone of depression, which appears on the maps, is based on the observations from a single monitoring bore which is consistent with monitoring data collected for neighbouring bores. It brings into question the integrity of the bore itself. The integrity of this bore, which is part of the state observation bore network, cannot be verified without an expensive investigation.**

It is gratifying to see that, yes, there should be only one cone of depression if there is only one borefield. And the one cone of depression should also fall directly under the extraction bores.



The latest2011-2012 residual drawdown map does have two cones.

However, neither cone of depression is directly under the borefield.

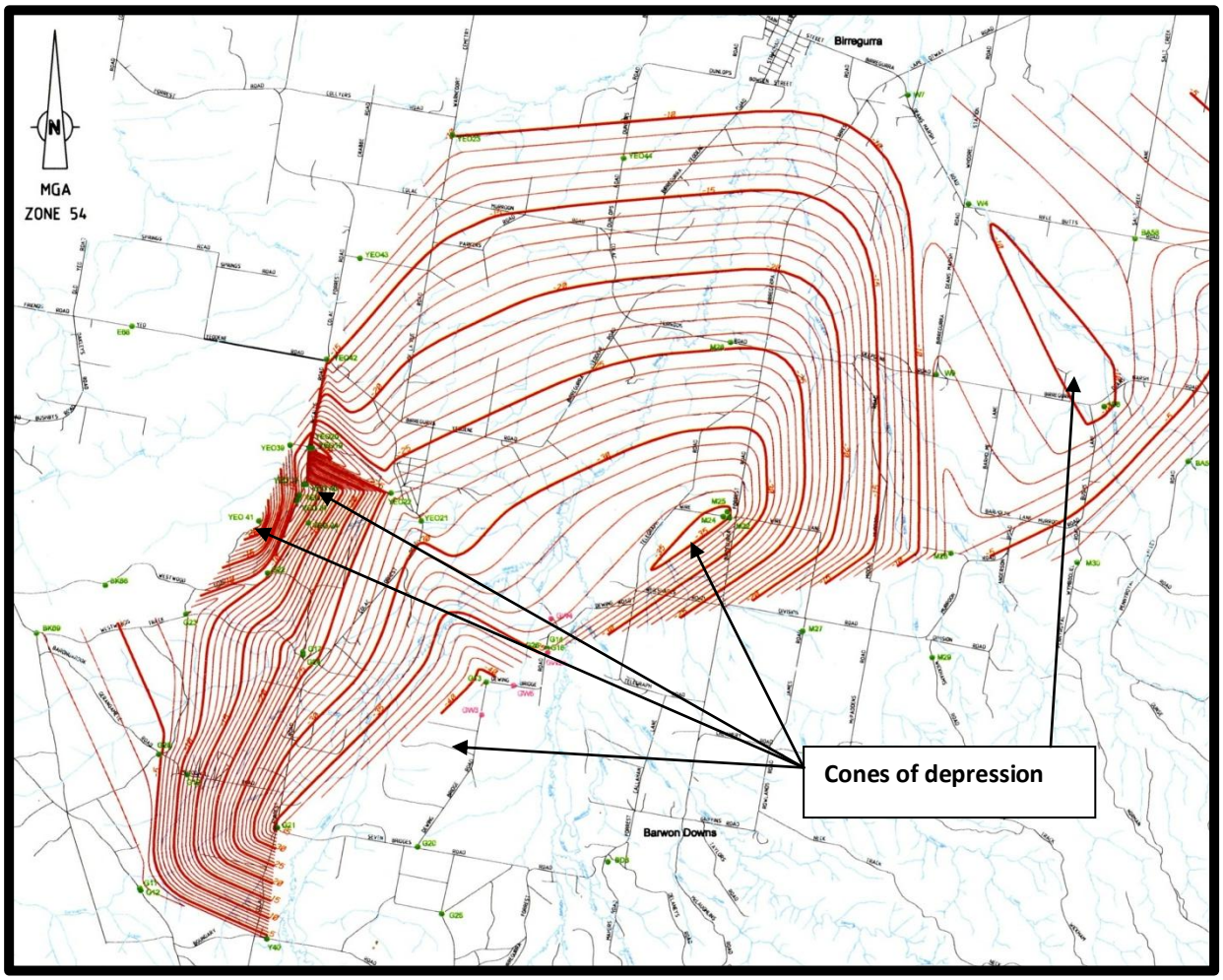


SOURCE: Residual Drawdown map from Barwon Water's 2008-09 Gerangamete Groundwater Report- SRW.

This residual drawdown map was recorded during extensive groundwater extraction from the Barwon Downs Borefield.

It shows four cones of depression and once again none of them are directly under the borefield. Also, Minister Walsh's explanation, second paragraph above, makes no sense when looking at this 2008-09 residual drawdown map unless there are a considerable number of bores that have lost their integrity.

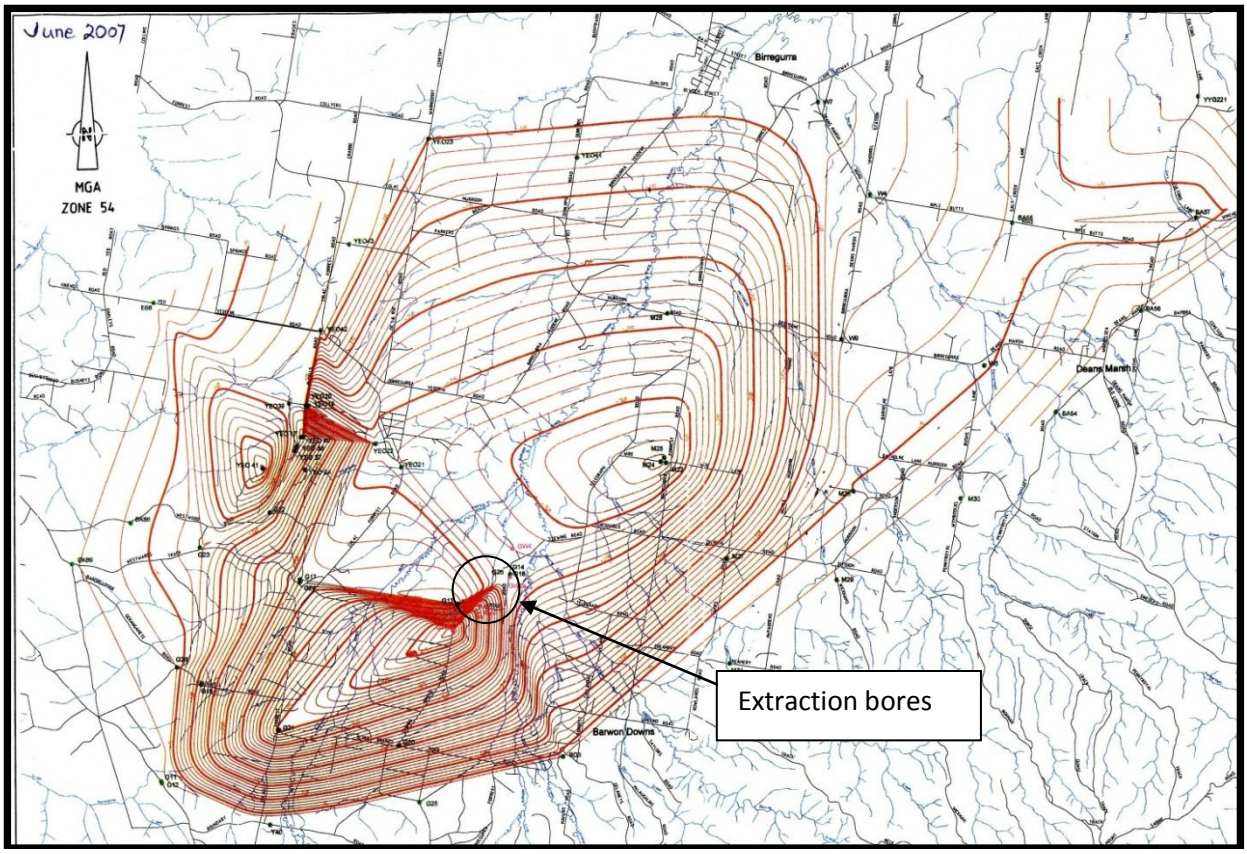
The next map shows five cones of depression and this adds more confusion and begs the question what is actually happening and what data can one be assured of being accurate.



SOURCE: Residual Drawdown map from Barwon Water's 2007-08 Gerangamete Groundwater Report- SRW.

Why half of this map is missing has not been explained. It passed Southern Rural water's scrutiny process and without correction will remain as a historical record. Reference to it and the other residual drawdown maps may adversely affect future management decisions.

(As with every map produced between 2004/05 to 2011/12 none of the maps show the residual drawdown influence out to the point of zero.)



SOURCE: Residual Drawdown map from Barwon Water's 2006-07 Gerangamete Groundwater Report- SRW.

There may be four cones of depression in this 2006-07 map but at least the deepest cone is relatively close to the borefield extractions.

To date there has not been a satisfactory answer given explaining how there can be multiple cones of depression when there is only the one borefield. If a process is ever put in place to look at this dilemma the inclusion of residual contours out to the point of zero should also be included. Considering the years and number of queries made regarding these two issues it is very much doubtful that they will ever be resolved. If the Water Minister is unable to clarify and or provide a satisfactory answer to the multiple cones then who would have the resources and expertise to do so?

However, Minister Walsh's political party when in opposition leading up to the 2010 State elections had this to say in September 2010...

"Put simply the Government does not have the skills to manage groundwater in the state effectively."

Thirty months later and Peter Walsh is now the Minister for Water and things appear to be no different.

CHAPTER SIX
Who Decided to Drop the Big Swamp from the 2008-2009 Flora Survey.

Material in this chapter has been taken from pages 86-100 out of Otway Water Book 18, "***The Boomerang Swamp***."

Developments late in 2008 and early 2009 prompted asking the then secretary, Peter Harris, of the Department of Sustainability and Environment (DSE), whether it was true that officers of the DSE had made the decision to leave an inspection and reporting of the situation in the Big Swamp out of the 2009 Barwon Water Flora Survey. Shortly after the Flora Survey report was concluded a third party told me that DSE officers were responsible for the omission of the Big Swamp from the report. In a letter to Peter asking this very question he vehemently denied this was the case. At the time this seemed to be the end of the matter. However, a letter written in 2012 (see page 78 for an extract from this letter and pages 90-91 for the complete letter) prompts the re-telling of this story.

The following time line of events depicts a most interesting series of developments.

1993
Stream flow gauging indicated a persistent and alarming drop in pH levels in the waters of Boundary Creek. Boundary Creek flows through the Big Swamp on its way to the Barwon River.

2004
Barwon Water had its licence to extract groundwater at the Barwon Downs Borefield renewed. Part of the licence conditions was to monitor water sensitive wetlands with possible groundwater connectedness. A flora study of such sites had to be completed within 5 years, by the end of 2009.

August/September2008
Test results carried out by Deakin University, Warrnambool, indicated water coming from the Big Swamp was extremely acidic and contained toxic metal and metalloids.

October 2008
Barwon Water was notified that test results indicated serious acid problems within the area of residual drawdown from their borefield at Barwon Downs. Following no action after a series of formal complaints sent to several state authorities, on 10 October ABC Stateline television ran a 10 minute grab on this very issue. The Barwon Water CEO was interviewed as part of this television presentation.
Barwon Water was aware and had been fully briefed by the Landcare Group, LAWROC, of data collected indicating a serious acid problem within the Board's sphere of influence.

November 2008

Southern Rural Water was notified of and given copies of these test results indicating that the Big Swamp was an Actual Freshwater Inland Acid Sulfate Soil site.

Before Barwon Water's 2008-09 Flora Survey commenced

17 December 2008.

Chris Hughes of Southern Rural Water (SRW) was asked, among other things, what action was being taken in regard to the acid and heavy metal levels being detected in the Big Swamp. Part of his reply included this...

> ***"In accordance with condition 7 of the licence, SRW has required Barwon Water to undertake a detailed Flora Survey. Barwon Water has sought tenders from suitably qualified expert consultants and the successful tender has not yet been appointed. Barwon Water must consult with the Department of Sustainability and Environment regarding suitable consultants. The investigation into Acid Sulphate soils will be incorporated into the consultant's analysis and the completed report is expected by mid-2009."***

This letter was quite specific containing an assurance that the Big Swamp would be included in the Flora Survey. Whether there was an Acid Sulfate Soil problem or not the Big Swamp should have been included in the Flora Survey as a matter of course and especially so when it was abundantly clear that this wetland was well within the influence of the residual drawdown and was displaying serious detrimental environmental impacts. The swamp was not included in the Flora Survey study..

For some reason Chris Hughes had never been asked to explain why the Big Swamp had been omitted from the Flora Survey and in 2012 ***several*** queries were sent to Chris Hughes asking why the Big Swamp was not included. Eventually a reply came from Angus Ramsay (SRW) prompting another look at earlier excuses why the Big Swamp had not been included in the 2009 Flora Survey. His letter was dated 2nd July 2012. An extract from this letter is as follows...

> ***"Thank you for your email of 11th June 2012 requesting information regarding the investigation into Acid Sulfate Soils at the Big Swamp being included in a Flora Study being undertaken on behalf of Barwon Water relating to the Gerangamete groundwater licence.***
> ***At the time of our response letter of 17th December 2008, Southern Rural Water and Barwon Water were finalising the scope of the study and had included Acid Sulfate Soil's as one of the aspects to be looked at.***
> ***It was determined that the issue of Acid Sulfate Soils in the area was too large and specialised to fit within the scope of the study and the team assembled to undertake the flora based study. The study team did visit a location outside of the study area that was showing aspects of Acid Sulfate Soil's, but as the team didn't have any expertise in this area, they weren't able to offer a considered opinion on the issue."***

It would appear that the Big Swamp initially had been included in the Flora Survey but was at a later stage omitted because of a lack of expertise that SKM brought to the study. What feeble excuses. Irrespective of an Actual Inland Acid Sulfate Soil problem or not, the Big

Swamp's obvious demise merited inclusion in the Flora Survey. A decision was made to exclude the Big Swamp and who made this decision?

Lack of Expertise, too Specialised??

In 2011 the Department of Primary Industries(DPI), Victoria, tabled a report, "***Acid Soils and Soil Acidification in Victoria – a review***," written by Crawford, Heemskerk and Dressel. These *experts* were prepared to *offer a considered opinion on the issue* even if SKM and Southern Rural Water thought that it was outside their area of expertise or responsibility. This quote is taken directly from this DPI report.

Quote One. ***"It is understood that in Boundary Creek, AASS has been created by an unsuccessful attempt to extinguish the fire by draining the peat."*** (AASS – Actual Acid Sulfate Soil)

The main objective of the Barwon Water Flora Survey was to determine the ***impacts*** on any Groundwater Dependent Ecosystems within the Barongarook High Region. The Big Swamp most definitely satisfied this criteria, was easily reached; was, up to the 1980s a permanently saturated and healthy wetland, and in recent times exhibited serious impacts that could not be denied. From Quote One above it would appear that there was some justification in leaving the Big Swamp out of the Flora Survey as it was stated as a fire related issue. The DPI document gave no explanation how the wetland had been drained. In fact, such a notion of fire activities being suggested as the cause of the Actual Acid Sulfate Soils may have prompted Barwon Water to finally tackle and make comment on such a ***"large and specialised"*** issue. In Barwon Water's question and answer section of the Water Supply Demand Strategy 2012-2062 there appeared to be no reluctance to make the following statements:

Quote Two **Q. What is the cause of acid sulfate soils at Big Swamp on Boundary Creek at Yeodene?**

A. A range of factors are likely to have contributed to changes at this site, including:

- **an outbreak of fire on the swamp in 1997 which started in an adjacent private property**
- **extensive drainage works conducted for fire management purposes**
- **extensive on-site fire management burning within the swamp to reduce fire risk**
- **an extensive drought between 1997 and 2009.**

There are many issues raised in these two quotes but it should be most obvious that you do not drain peat to extinguish a peat fire, nor does one carry out fuel reduction burns within a dry peat area. Both of these notions presented above are nonsense and display a high level of ignorance regarding the behaviour of peat fires. It is interesting to note that after the 1997 fire had supposedly been extinguished it surfaced again in 1998 and then smouldered for another 12 years before surfacing and causing another serious wild fire in 2010.

Perhaps the best people to ask about fire behaviour and to clarify the wild accusations made by the Department of Primary Industries and Barwon Water would be those people accused of possibly causing the Actual Acid Sulfate Soils of the Big Swamp. Consequently a query was

sent to the Colac branch of the Country Fire Authority (CFA) asking for comment on the two quotes cited above.

The CFA reply duly arrived...

Subject: Reply to acid sulphate letter

From: Brian Brady (B.Brady@cfa.vic.gov.au)

To: otwaywater@yahoo.com.au;

Date: Tuesday, 24 April 2012 2:45 PM

Hi Malcolm, in response to the two quotes in your letter.

Quote 1..Draining the peat was never considered an option by CFA or any of the organisations that have been in a supporting role in dealing with this situation, it is certainly not documented as a control option, in fact it is quite the opposite to what we considered early on in the event and that was to flood the area, not to drain it.

Research has since indicated that the drier the peat the greater chance of it self combusting so draining it is not an option.

Quote 2..point two and three regarding the "drainage works" conducted, as in the first quote response, there were no drainage works conducted, the trench that was constructed was done so to create a physical break in the continuity of the peat so that it would burn to an edge and run out of "available fuel" when it reached the break. CFA have no technical expertise in draining swamps nor was any sought and, as above, draining the swamp would create more problems than it would have solved.

There was no fuel reduction burning (fire management burning in the quote) in the swamp area whatsoever. The area burnt within the swamp was that consumed during the two main fire events that occurred in the swamp area in October 1997 and March 2010.

One of the control strategies proposed after the 2010 fire was to burn out the dead vegetation within the swamp that had accumulated after the fire but this option was never acted on due to the fact that it may have set any unburnt peat alight and also it was considered too dangerous to have personnel walking on the peat surface in case the crust on the surface gave way and the personnel may have sunk into what may have been powdery ash under the crust which may still have been hot.

There is still the proposal to construct a clay plug along the eastern trench and part of the southern trench which is designed to increase the moisture level of the peat to prevent the peat drying out to the point of self combustion and to also extinguish any pockets of smouldering peat under the surface. The "plug" proposal is endorsed by Latrobe University and will be proceeded with if funding becomes available.

The matter of acid sulphate soils occurring after the fires and issues about the water table are completely outside CFA's scope of responsibility and expertise and therefore CFA will not involve itself in the resolution of these issues.

Regards

Brian Brady

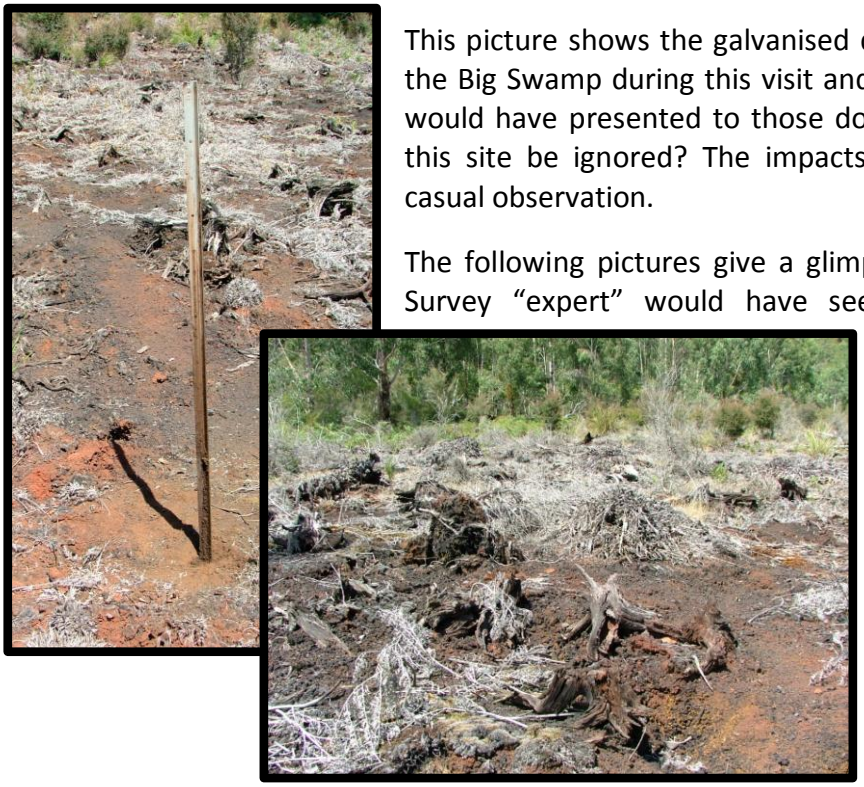
Nothing surprising in this reply.

- CFA never considered draining the peat,
- no drainage works were conducted and
- no fuel reduction was done within the swamp.

As stated the Big Swamp had initially been included as part of the 2008-09 Barwon Water Flora Survey and it is interesting to note that Sinclair Knight Merz (SKM) the company conducting this survey, did not have the expertise to deal with the issue. This is most curious, especially when a local Landcare Group, LAWROC, appeared to be able to bring more expertise to the issue than the "specialists." The LAWROC Group was able to identify severe impacts and provide the necessary experts and resources to positively have the Big Swamp declare an Actual Freshwater Inland Acid Sulfate Soil Site with the distinction of having a soil sample test out as one of the worst top three samples found in Australia. The Southern Cross University study that confirmed the Big Swamp as an Actual Inland Acid Sulfate Soil site was commissioned by LAWROC and paid for in 2010 after every other state authority denied any responsibility.

It is most surprising that SKM with all the resources at its disposal could not assess the state of the Big Swamp irrespective of it being an Acid Sulfate Soils site or not. However, what is more alarming is that SKM is Barwon Water's major consultant for the Barwon Downs Borefield development and management. If SKM did have the Big Swamp site assessed who made the decision to omit it from the Flora Survey and on what grounds? At that stage the site presented massive detrimental impacts of some kind and the only people suggesting that there was a possibility that it was an Acid Sulfate Soil site were members of the LAWROC local community group. The Big Swamp could not be ignored, it was a site that fitted all the criteria of the Flora Survey that was attempting to assess impacts on wetlands within the drawdown area of the Barwon Downs Borefield.

The Big Swamp may not have been assessed but it most definitely was visited during the conducting of the Flora Survey. It is located closer to the Barwon Downs Borefield than the majority of the original 84 flora sites surveyed in 1993-94. Was the Big Swamp left out of the Flora Survey on Purpose? It looks that way.



This picture shows the galvanised dropper that was placed in the Big Swamp during this visit and the visual impact this site would have presented to those doing the survey. How could this site be ignored? The impacts are obvious to the most casual observation.

The following pictures give a glimpse of the scene the Flora Survey "expert" would have seen when visiting the Big Swamp.

It is my guess those people visiting this site would have been horrified and it was someone else that ordered the omission of this site from the survey.

Whether the "***team***" had the expertise to deal with acid sulfate soils or not when visiting this site, alarm bells should have rung loud and clear that this wetland had been subjected to a dramatic detrimental influence of some kind. The obvious degradation of effects on the water dependent vegetation in this swamp was the very thing that the Flora Survey was aimed at investigating. How or why this site was dropped from the survey is beyond belief.

4 March 2009

The flowing extract is from a letter sent from the Water Minister, Tim Holding, of the time **(DSE Ref: DSE063402, File: CS/07/3073).**

> ***"BW recently completed a flora study as part of the monitoring requirements of the groundwater extraction licence it has for Barwon Downs. Whilst acid sulphate soil (ASS) monitoring was outside the scope of the study, no evidence of acidification was found. Nonetheless, BW is now proposing to work with agencies to specifically investigate ASS impacts at local and regional sites."***

In 2009 this response prompted a formal complaint being sent to Southern Rural Water, "the keepers of the watch."

A similar letter of formal complaint was sent to all of the statutory authorities, including the Department of Sustainability and Environment (DSE), that had been approached over the demise of the Big Swamp asking that some action be taken.

3 May 2009

This extract forms part of a letter from Peter Harris the then Secretary of DSE(His Ref: SEC005476, File CS/03/0445-3)...

> ***"In preparing the Barwon Downs licence in 2003/04, extensive hydrogeological and ecological investigations occurred. An independent panel considered that all identified wetlands in the area were sustained by a local shallow water table not connected to the regional groundwater resource that supplies the borefield. The panel recommended that the licence require Barwon Water undertake flora surveys to further investigate the connection between riparian vegetation and groundwater levels.***
>
> ***BW commissioned a flora study*** (2008-09) ***as part of the monitoring requirements of its groundwater extraction licence. Acid Sulphate soil (ASS) monitoring was outside the scope of the study, however no evidence of acidification was found. Nevertheless, BW is now proposing to work with agencies to specifically investigate ASS impacts at local and regional scales."***

11 May 2009

Peter Harris's letter prompted this reply...

Mr. Peter Harris
Secretary
Department of Sustainability and Environment
8 Nicholson Street
PO Box 500
East Melbourne
Victoria 8002

Dear Mr. Harris

Re; Groundwater Extraction at Barwon Downs.

Thank you for your reply to my formal complaint regarding the ASS,
Your Ref. SEC005476,
FILE CS/03/0445-3.

There are some points that you make in your reply that indicate that you are not being given up to date advice.

1. *In spite of the protracted drought of 12 years there are streams and wetlands in the adjoining areas to the Barwon Downs borefield that are not being influenced like the wetlands of Boundary Creek. The groundwater extraction at Barwon Downs is causing serious problems along Boundary Creek.*
2. *Yes BW does release water out of its Colac to Otway pipeline into a tributary of Boundary Creek. But this most definitely does not address the impact on flows in Boundary Creek.*
3. *The area called the Big Swamp on Boundary Creek where the ASS is, seldom sees any of this released water.*
4. *The trigger level for release of this water into Boundary Creek has been exceeded for years and all that this water does is exasperate the ASS problem.*
5. *Unfortunately the extensive hydrological and ecological 2003/04 investigations that you refer to, must not have been looked at by the independent panel. The 14 May 2003 SKM "Recommendations for Groundwater Licence Conditions" quite clearly delineates that the wetlands in the Big Swamp on Boundary Creek have a direct connection to the EVF aquifer that BW is extracting groundwater from. For you to be advised that "...all wetlands in the area were sustained by a local shallow water table not connected to the regional groundwater resource that supplies the borefield" is almost beyond belief. The reports are available that quite clearly indicate the opposite.*
6. *The reason for the trigger level that implements releases from the Colac Otway pipeline is set at 158.5 AHD. It was set at 158.5 AHD because the hydrological investigations clearly stated that if the watertable dropped to 158 AHD the wetlands in the Big Swamp would begin to dry out. The AHD has been way below this level for years, consequently the production of acids and releases of toxic heavy metals – AASS into the Big Swamp area.*
7. *Adjoining aquifers most definitely have not suffered 50 m drawdown like at Barwon Downs.*
8. *Water Data Victoria pH levels for Boundary Creek clearly show the dramatic increase in toxic acid levels that should have triggered investigations years ago. Someone has not being doing their job of scrutinising the effects of groundwater extraction.*
9. *You talk of the early 2000s ecological investigations but it would appear that you were not informed that these studies began in 1986. Parts of the studies and their recommendations that have not been implemented. Your advisers would appear to have an extremely limited knowledge of these studies and their implications.*
10. *Yes the ASS may have been outside the scope of the 2009 flora study just completed. However the site was visited and the ASS should have been most apparent to the consulting team that finalised the study, considering the composition and expertise of this team.*
11. *What I find most disturbing is that DSE consultants on this team, indicated that when there was discussion on the ASS, this aspect of the study was not to be included the final report.*

I would appreciate you letting me know the reasons why officers from your Department insisted that any mention of the ASS was not to be included in this 2009 Carr flora study report?

I would also like to know why the Colac Otway Shire was not asked to have a representative on this consulting team.

I believe that you cannot make adequate decisions if your advisors are not fully informing you of all the facts. A site visit would seem most appropriate, preferably with your advisors present so that you can see for yourself and gain first hand knowledge information. I would recommend that if you plan to make a site visit that you invite me along as your guide.

I once again lodge a formal complaint that groundwater extraction at Barwon Downs is causing serious Actual Acid Sulfate Soils in the wetlands of the Big Swamp on Boundary Creek and that immediate site investigations should take place.

Yours sincerely,

Malcolm Gardiner

11-05-2009
PS I have included a few pages with water sample results of water along Boundary Creek. (PP 41, 63-66 Bk (8))

16 July 2009

Over two months later, a reply arrived from the Secretary and more startling revelations were revealed and very few questions received a reply (reply is found on page 87).

- As long as Barwon Water adheres to the licence conditions everything is in order and any suggestion of things to the contrary can be ignored.
- A compensation water release of a maximum 700 ML/year into the depleted aquifer is seen as adequate when 12000 ML/year is being extracted.
- Thoughts and discussion regarding different water compensating releases have remained just that for over three years, thoughts. No evidence has been presented that any discussion has taken place.
- Yes, there is evidence of other Actual Inland Acid Sulfate Soil sites appearing within the catchment but Peter failed to add that they ALL fall within the area of residual drawdown from the Barwon Downs Borefield.

Peter Harris, in his first reply stated that all identified wetlands in the area were not connected to the aquifer Barwon Water was pumping from. The fifth paragraph of his letter below, states exactly the opposite.

If it is accepted by Peter that Boundary Creek is connected to the deep water aquifer it also has to be accepted that many of the swamps along Boundary Creek are connected to this aquifer including the Big Swamp and Boomerang Swamp. The Boomerang Swamp is in the headwaters of one of the tributaries to Boundary Creek.

- One of the "***suitable licence conditions***" that SKM undertook for the State Government in the late 1990s, was that the Permissible Annual Volume should be

set at 4000ML/year and not be exceeded. Despite this limit the 2004 licence given to Barwon Water was set at 20000 ML/year, five times greater than the level of anticipated and hopefully acceptable environmental impacts.

- It may have been characteristic that the Barwon River and other streams across the Barwon River Catchment had dried up but it was not the characteristic in the Gellibrand River Catchment, a catchment that was outside the direct influence of the Barwon Downs Borefield.
-

Department of Sustainability and Environment

Ref: SEC005678
File: CS/07/3073

8 Nicholson Street
PO Box 500
East Melbourne Victoria 8002
Australia
Telephone: (03) 9637 8000
Facsimile: (03) 9637 8100
ABN 90 719 052 204
DX 210098

Mr Malcolm Gardiner
1805 Colac Beech Forest Road
KAWARREN VIC 3249

Dear Mr Gardiner

GROUNDWATER EXTRACTION AT BARWON DOWNS - FURTHER CORRESPONDENCE

Thank you for your letter dated 11 May 2009 regarding acid sulphate soils (ASS) at Big Swamp, Boundary Creek.

Southern Rural Water (SRW) is the licensing authority responsible for administering Barwon Water's (BW) licence to extract at Barwon Downs. SRW is satisfied that BW is adhering to its licence conditions including the release of a compensation flow into Boundary Creek. The flow is released when groundwater reaches 158.5 AHD (as stated in your letter) in the relevant observation bore.

The condition requires that a constant flow is released equating to two million litres. To enhance the benefits of the compensation release BW has proposed investigating the release of this water in flushes, rather than at a constant rate. It is considered that this may provide a more 'natural' flow for the creek. Should this be established BW would have to provide evidence to SRW that such an approach would be environmentally beneficial and the licence conditions would need to be amended.

The continuing dry climate is impacting water resources across the region. Stream flows have declined over the past 12 years. During the last 12 months, record low stream flows have occurred in a number of rivers across the region, including the Barwon River, which ceased to flow for a number of months during summer. This was repeated across the catchment, with many ephemeral streams having little or no flow through the whole year. The same trend is evident in wetlands with Lake Gnarpurt, classified as permanent under the Corrick classification system, drying out in recent times.

The connectivity of Boundary Creek and the Eastern View Formation aquifer is not in dispute. This is in fact the reason why the compensation flow condition, mentioned above, was included to BW's licence.

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*Any personal information about you or a third party in your correspondence will be protected under the provisions of the **Information Privacy Act 2000**. It will only be used or disclosed to appropriate Ministerial, Statutory Authority, or departmental staff in regard to the purpose for which it was provided, unless required or authorised by law. Enquiries about access to information about you held by the Department should be directed to the Manager Privacy, Department of Sustainability & Environment, PO Box 500, East Melbourne, 3002.*

Victoria
The Place To Be

In regard to pH levels in Boundary Creek, it would take a comprehensive study to establish if changes to pH were the result of climate change or groundwater extraction. Sulfidic sediments which remain in saturated anaerobic conditions are not usually a problem and are termed Potential Acid Sulphate Soils. However, if exposed to air the impact of ASS can be significant. Evidence of the development of ASS in the other parts of the catchment are starting to appear and it is again unclear whether the prolonged dry conditions or the pumping of groundwater are key factors.

Assessing the impacts of ASS in the region falls under the responsibilities of the Department of Primary Industries (DPI). A mapping project has been proposed to look at statewide occurrences of ASS and the processes involved. This will allow DPI to identify whether ASS are caused by climate change or by other local influences for specific sites.

Officers from the Department of Sustainability and Environment (DSE) keep track of all studies relevant to the region. Investigations into the Barwon Downs borefield began in 1968 with a study of the groundwater potential of the region by S. Hancock. The first report which focussed solely on the environmental considerations of water resource use in the region is the 1986 report you mention by Quentin Farmar-Bowers. The recent SKM study "Recommendations for Groundwater Licence Conditions" was commissioned for the purpose of assessing BW's licence and provided adequate scope to determine suitable licence conditions.

As you are aware BW had to produce a flora study under the conditions of its licence. The findings of the flora study were formally presented to SRW and the Corangamite Catchment Management Authority, organisations with direct interest in the sustainable management of water resources in the region. Your assertion that officers from this department would direct the findings of an independent study commissioned by another body is unfounded.

Thank you again for raising this matter with me.

Yours sincerely

PETER HARRIS
Secretary

16 / 7 /09

- Someone made the decision not to include the Actual Inland Freshwater Acid Sulfate Soil site of the Big Swamp in the findings of the 2008-09 Flora Survey,
- despite Southern Rural Water insisting that it would be included and
- despite the fact that the Big Swamp was visited during the Flora Survey.
- Peter's Department had to be consulted regarding suitable consultants to do the work and his Department was fully aware of the issues involved.
- Aware of the issues why did the DSE not insist that the Big Swamp be included?
- Why didn't DSE involve the DPI as part of its responsibility?
- Considering the survey did not have to be finished until the end of 2009 there appeared to be an uncharacteristic rush by someone to complete the survey and publish the results by April 2009.

Have lies been told and perpetuated, is the Big Swamp and Boomerang Swamp demise just a case of incompetence, a problem too hard to deal with or just a situation whereby authorities believe they can say and do whatever they want with no fear of having to be held accountable for what they say and do? Was the decision to omit the Big Swamp from the 2009 Flora Survey another case of this type of management?

You be the judge.

Southern Rural Water
Managing Water. Serving Communities.

2nd July 2012

Mr Malcolm Gardiner
1805 Colac - Beech Forest Road
KAWARREN VIC 3249

Dear Malcolm

Subject: Acid Sulfate Soil site at the Big Swamp inclusion in the 2009 Flora study

Thank you for your email of 11th June 2012 requesting information regarding the investigation into Acid Sulfate Soils at the Big Swamp being included in a Flora Study being undertaken on behalf of Barwon Water relating to the Gerangamete groundwater licence.

At the time of our response letter of the 17th December 2008, Southern Rural Water and Barwon Water were finalising the scope of the study and had included Acid Sulfate Soil's as one of the aspects to be looked at.

It was determined that the issue of Acid Sulfate Soil's in the area was too large and specialised to fit within the scope of the study and the team assembled to undertake the flora based study. The study team did visit a location outside of the study area that was showing aspects of Acid Sulfate Soil's, but as the team didn't have any expertise in this area, they weren't able to offer a considered opinion on the issue.

The report states under Recommendations 6.4 – "it is recommended that a study be undertaken to determine whether Acid Sulfate Soil's are present in the catchment and assess the effect of drying conditions may have on these soils and the associated surface water systems (ie wetland and streams). The assessment should include the outcomes from the study identified in recommendation 1 to determine the key drivers of any identified impacts or risk due to the presence of Acid Sulphate Soil's".

After the flora report was received and the results discussed, it was agreed that a group should be established to undertake a regional look at Acid Sulfate Soil's. The Corangamite Region Inland Acid Sulfate Soil's (CRIASS) Steering Committee was the group that was established. This multi agency steering committee has received some preliminary reports from the La Trobe University as part of the regional

Page 1 of 2

"key drivers"

These would be better called "causes." Four years on and still no study looking at the "key drivers" driving the creation of Actual Acid Sulfate Soils in the area of drawdown influence from the Barwon Downs Borefield.

investigation into Inland Acid Sulfate Soils and has released a bulletin on these findings. (Please find attached)

As more investigations are completed and findings made from the study, the steering committee will release these via bulletins with the final paper from the student released in due course.

If you have any further enquiries regarding this matter, please contact me on 55641713 or mobile 0419 509087 or email me at angusr@srw.com..au

Yours sincerely

ANGUS RAMSAY
Acting - Manager Applications
Groundwater and Rivers
Southern Rural Water

Page 2 of 2

Unfortunately many of the same policies, management practices, people, officials and government departments are presently involved in considering the connecting of the Colac Otway Pipeline water supply system into the Barwon Downs Borefield.

CHAPTER SEVEN
Augmentation for Colac by 2017

It is quite baffling why the Colac water supply system requires another augmentation by 2017 when...

1. Barwon Water's projections for the Colac system in 2002[3] stated that the Colac system would not require augmentation until 2022.
2. In 2003 another Barwon Water Report[4] quoted growth estimations that calculated that Colac would not exceed current system yield until 2030.
3. With this in mind the 2003 report stated that there was no need to begin augmentation plans until 2022.
4. This indicated that at the time the Colac reticulation system was not in immediate need of augmentation.
5. This was also reflected by the Colac and District Water Board pre 1997 predictions. The Board had planned an additional Service Basin Number 5 to be in operation by 2015 with a capacity of 360 ML.[17] (Barwon Water took over the Colac & District Water Board in 1997)
6. However, Service Basin Number 5 was planned, constructed, commissioned and water began flowing into this basin in 2007 with a capacity of 450 ML.
7. This Number 5 basin quickly filled and was operational long before the drought of the time had broken.

Irrespective of why this 2007 augmentation happened well ahead of time and irrespective of how much further than 2030 this new Service Basin Number 5 would have extended future needs, it is admirable to be planning so far ahead and to be starting this process in 2012. However, why there is an urgency to have this latest venture completed by 2017 is quite strange.

The six options presented for public comment are...

1. Three new service basins near Colac with each basin holding 500ML at a cost of $30 million for each basin – TOTAL $90 million.
2. Enlarge the West Gellibrand Reservoir at a cost of $42 million for an extra 1300ML.
3. Pipe water from the West Barwon Reservoir at a cost of $19 million.
4. Extract water from the Wurdee Boluc channel (via Murroon) at a cost of $22 million. This would involve building a holding basin at Murroon and would provide 1000ML/year.
5. Extract water from the Wurdee Boluc channel (via Birregurra) for $41 million and would involve building a holding basin with a benefit for Colac of 1000ML/year.
6. Extract 1000ml/year of groundwater from the Barwon Downs borefield at a cost of $17 million.

In the Barwon Water "***Colac Community reference Group (CCRG) Terms of reference and Expression of Interest"*** document this statement was made...

"This water supply upgrade is the largest capital project identified in Barwon Water's 2013-2018 Water Plan. We have allocated up to $27 million in capital expenditure to ensure Colac's security of supply into the future."

Also...

SOURCE: Slide presentation by Joe Adamski Managing Director to Colac Otway Shire 12 Sept.2012.

If this means what it appears to be saying then the only options that come in under budget are options 3, 4 and 6. Even constructing just one service basin near Colac costs $30 million. The options that maintain Colac's autonomy are ruled out if the budget is $27 million and the augmentation is to be completed by 2017. The 2013-2018 budget allowance is only $27 million.

My application or expression of interest to be on the Colac Community Reference Group was placed very early and long before the closing date as were six other candidates, including a highly qualified Neil Longmore from the Gellibrand area. The closing date was then extended by a week and additional applicants were approached to be on this group. Eleven were chosen. The following letter I found most interesting.

Barwon Water

Our Ref:
Your Ref:

Enquiries To: 1300 656 007

23 October 2012

Mr M Gardiner
1805 Colac Lavers Hill Road
Kawarren vic. 3249

Dear Malcolm

Re: Colac Community Reference Group

We are writing to thank you for your Expression of Interest in becoming a member of our Colac Community Reference Group.

We received applications from a number of excellent candidates. We went through a rigorous short-listing process, during which we assessed the applications against a number of criteria, including expertise in water, community and environmental issues.

Unfortunately, you have not been selected as a member of the reference group this time. However we are very grateful for your interest in Barwon Water and we thank you for submitting an application.

We would like to keep your contact details on file, should we require your feedback on any projects in the Colac area in future.

We will be communicating the outcomes of our investigations into the future water supply options via our website www.barwonwater.vic.gov.au and in the local media.

Once again, thank you for your interest in what is a very important initiative for the Colac region.

Yours sincerely

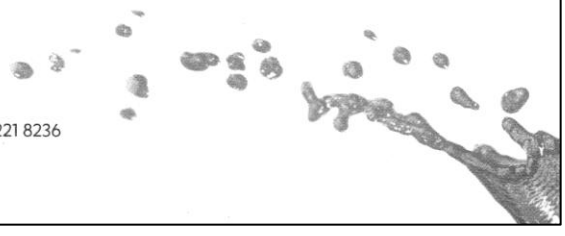
Carl Bicknell

Carl Bicknell
General Manager
Strategy and Planning

Barwon Region Water Corporation
ABN 86 343 318 514

61-67 Ryrie Street, Geelong Victoria 3220
PO Box 659 Geelong Victoria 3220 TEL 1300 656 007 FAX +61 3 5221 8236
DX 22061 (Geelong)

www.barwonwater.vic.gov.au



Needless to say my stance is that there should be no further groundwater extraction from Barwon Downs for either Geelong or Colac until it has fully recovered and only then after an exhaustive re-evaluation and review of the licence conditions. In the meantime the taking of water from the borefield or the Birregurra and Murroon options should not be considered.

Justin Franklin of Barwon Water was asked the following question.

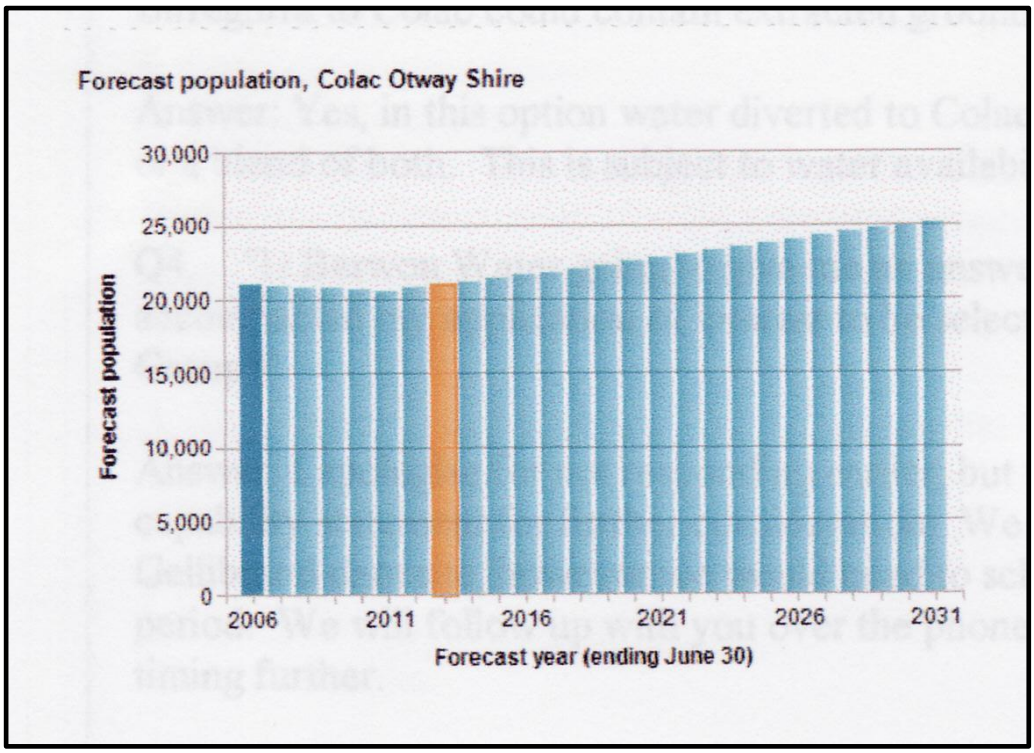
Q. ***"Is it conceivable that water taken from the Wurdee Boluc Channel via Murroon and or Birregurra could contain extracted groundwater from the Barwon Downs Borefield?"***

Ans. ***"Yes, in this option water diverted to Colac could contain surface water, groundwater or a blend of both. This is subject to water availability and licence conditions."*** (The answer to this question - Email 4 January 2013 16:52:22 AEDT)

The following question and answer formed part of this correspondence.

Q. ***"Am I wrong in having been lead to believe that Colac's Service Basin Number 5 was built to see an adequate water supply for Colac into the late 2020s?"***

ANS. ***"Increased growth and decreased water availability forecasts (based on CSIRO data) indicates that additional supply capability is required sooner than anticipated. This has brought forward the need for an upgrade. Revised water demands have also been taken into account utilising the latest state and local government growth forecasts for the area. Forecasts will continue to change from time to time to take account of the latest information."***



SOURCE: Colac Otway Shire website January 2013, Population Forecast.

This chart is indicative only and it must be noted that it is applicable to the whole of the Colac Otway Shire, not just the area supplied by Barwon Water in the Colac district. Colac's population has remained relative stable since being made a city (10,000 people) in 1960.

The population 53 years later is approximately 12,000 appearing to be relatively stable in recent years.

It seems amazing that the Colac Water Board and Barwon Waters' predicted water needs for Colac and district could be so wrong. The original population growth and decreased water availability forecasts would have prompted the construction of Service Basin Number 5 some-time around 2022 and was calculated to provide Colac with water into the 2030s. Once again the question arises as to why the urgency to augment Colac's water supply by 2017?

It is doubtful that linking the West Barwon Reservoir (at around 170mAHD) to the Colac system is the reason although water could be gravity fed from the West Gellibrand and Olangolah Reservoirs (around 360mAHD) into the West Barwon Reservoir. But this could be done anytime.

Perhaps, if Colac is locked into the Barwon Downs Borefield by 2017 it may have some significance when Barwon Water applies for renewal of the Barwon Downs Borefield groundwater extraction licence in 2019.

Whatever the reason(s) for the haste it is doubtful that Colac requires augmentation before 2030 and considering the management style of Barwon Water there is a convincing argument that the Colac water system should maintain its autonomy.

Colac water stores fall to 70 per cent

by Jennifer Chiu

Colac and Apollo Bay's water storages have fallen below 70 per cent after being nearly full three months ago.

Barwon Water's latest water storage figure for Colac's basins is 68.1 per cent, nearly 30 percentage points lower than on November 16.

Apollo Bay's Marengo basin has also dropped about 30 percentage points, from 100 per cent on December 7 to 67.2 per cent last Friday.

Barwon Water infrastructure services general manager Paul Northey said Colac's storage level was about the same as it was this time last year, while Apollo Bay's basin was drier.

"With Apollo Bay, we're at 68 per cent and last year we were 79 per cent, so it has been a drier summer in the Apollo Bay area and our storages are slightly down," Mr Northey said.

"It's not unusual for this time of year, however we are asking customers in Apollo Bay to be mindful of their water use – there are stage two water restrictions in Apollo Bay," he said.

Mr Northey said neither Colac nor Apollo Bay were at risk of running out of water this summer.

"The forecast that we've seen from the CSIRO and the other organisations have predicted a dry and reasonably hot summer and that's certainly been the case so far," he said.

"But we're in a very good position in Colac, and with Apollo Bay, the fact the storages are a bit lower does re-emphasise the need for increased storage there.

"We'll continue to monitor the situation and consider options if the storage continues to drop significantly.

"We should still be able to pump some water into the storage, there's no risk at this stage."

Stage two restrictions mean Apollo Bay residents must not water lawns until April 27 and they may only water gardens on alternate days, if they use a watering system.

Mr Northey said construction on Apollo Bay's new water storage was progressing "very well" and on track for completion in 2014.

"It won't be finished in time for the start of next summer," he said.

"But we'll be able to later this year start potentially filling the storage."

Paul Northey says in this article that despite a dry and reasonably hot summer Colac water supply is in a very good position.

SOURCE: Colac Herald 11 Feb. 2013.

www.colacherald.com.au

Water from bore sensible option

SOURCE: Colac Herald 15 Feb.2013

by Jennifer Chiu

A leading groundwater expert says pumping a borefield is a "sensible" option to supply water for Colac, despite being the most unpopular option.

Dr Rick Evans said pumping water from the Barwon Downs borefield was "feasible", despite being controversial in the general community.

"It is certainly a sensible option," Dr Evans said of the borefield.

"I think it's still open as to what is the best option," he said.

Barwon Water has identified six options to boost Colac's water supplies.

Dr Evans, principal hydrogeologist with Sinclair Knight Merz, gave a presentation this week to members of a Barwon Water community reference group helping choose a new water source for Colac.

Pumping a billion litres of water a year from the Barwon Downs borefield is among the water supply options. But a survey showed the borefield was the least popular option among Colac and district people.

Dr Evans said pumping a billion litres for Colac would pale in comparison with the 12 billion litres of water the borefield supplied to Geelong each year between 2006 and 2010.

"The incremental effect of Colac, on top of the Barwon Downs pumping to be used for Geelong's supply, would be small," he said.

But Dr Evans said taking water for Colac would still have an environmental knock-on effect.

"There's no such thing as zero effect," he said.

"There needs to be ongoing assessment and increased effort on possible environmental effects.

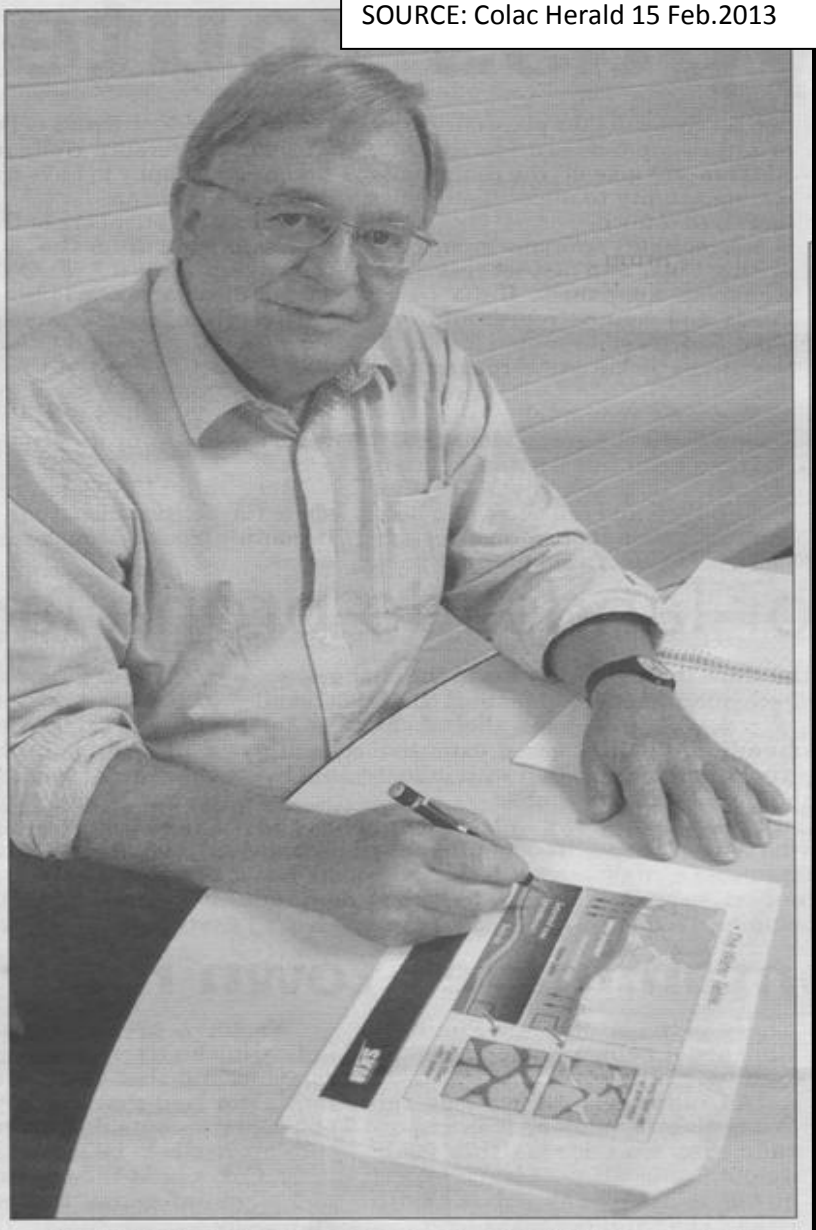
"The key issue is the community needs to decide how much environmental effect is acceptable."

Dr Evans said a "small lowering" of groundwater levels would actually reduce the chances of land salinity, while the land above the borefield would drop by 10 centimetres over "hundreds of years" if Barwon Water pumped from it.

The other water supply options are building three new basins, enlarging the West Gellibrand Reservoir, taking water from the West Barwon Reservoir, and using water from the Wurdee Buloc channel via Muroon or Birregurra.

The $30-million new basins plan was the most popular option on the survey, and the enlarging the West Gellibrand Reservoir was the second-most popular.

The Barwon Downs borefield option is the cheapest, at $17 million.



ADVICE: Dr Rick Evans says pumping water from a Barwon Downs borefield to supply Colac could be a feasible option.

b

Dr Rick Evans and the firm he is currently principal hydrogeologist to, Sinclair Knight Merz, have been the major players advising Barwon Water in the development, implementation and management of the Barwon Downs Borefield.

Linking the Colac system to the borefield at Barwon Downs may be feasible and the cheapest but it is definitely NOT the most sensible. Smouldering peat, fire, destruction of wetlands, loss of biodiversity, farmer's reliable water supply lost, summer green pick gone, platypus, fish and native crayfish decimated, toxic heavy metals and metaloids released into streams and the pollution of groundwater should all add up to a decision not to link the continuation of such things to the Colac water system.

As Dr Evans states, ***"The key issue is, the community needs to decide how much environmental effect is acceptable."***

If earlier reports in the Colac Herald are to be believed the majority of the community has already made up its mind – the effects so far are not acceptable and that there should be no further groundwater extraction.

Dr Evans says there may be knock-on effects but isn't it amazing that after 30 years his firm's latest flora survey 2008-09 featured in a media release (see page 111) back in April 2009 headed "Flora Study Inconclusive," stated it cannot be determined what the knock-on effects are. Four years after this press release and the recommendations made in this report to overcome this shortfall are still to be implemented.

Also to state...
"There needs to be ongoing assessment and increased effort on possible environmental effects," is nothing new. This has been said for decades and little ever eventuates.

CHAPTER EIGHT
Burnt Peat in the Big Swamp

Occasional the comment has been made that by burning peat the acidity levels in the peat drops/improves moving closer to neutral. At the third Australian Acid Sulfate Soil conference one of the speakers, Philip Hirst, presented a paper on the study of burnt peat he is doing at Southern Cross University as part of his higher qualifications.

Namely: "***Effect of brushfire on soil geochemistry in Fe and organic rich (peat) acid sulfate soil material***."

Philip was asked the question do the acid levels drop as a result of peat being burnt. The simple answer is there is a paucity of information on this notion and very little if any research being done. However, Philip is hoping to fill some of the gaps and is studying the effects created when peat is burnt. The Big Swamp will feature in this research.

After viewing photographs of the Big Swamp post the 2010 peat fire, Professor Richard Bush and Philip were inspired enough to visit Victoria and spend two days as guests of the LAWROC Landcare Group.

On this occasion a field trip to the Big Swamp in August 2012 revealed that the pH was significantly lower in a burnt profile when compare with an unburnt one. However, this cannot be taken that the question has been answered and that in burnt peat the acid levels actually rise. Many other factors have to be considered and this is the very reason for the research project. Even at the conclusion of Philip's work the question may still be unanswered and the research may very well throw up more questions than answers. Philip's final paper on the subject of bushfire effects is something to look forward to in anticipation.


Figure 7: Site 1, abundant red oxide on surface, sampling by Richard Bush, Andrew McLennan and David Jukes.

7

Figure 7 SOURCE: Field Trip Summary 23 August 2012 (Hirst/Bush)

CHAPTER NINE
The Kawarren Borefield Report

In 2007 the State Government's first options for augmenting Geelong's water supply was to investigate the extraction of 16GL/year from the Kawarren Borefield site. The last time the Government pursued this idea of opening up the Kawarren Borefield during the early to mid 1990s, investigations and studies at the time found...

1. that surface and groundwaters were already over allocated,
2. that applying the most basic of environmental flows on the Gellibrand River would cause many Western District towns to run out of water in a drought episode,
3. that extracting 3GL/year would in all likelihood dry up 17 kilometres of the Gellibrand River upstream from the Colac to Lavers Hill Bridge,
4. that the Gellibrand River and tributaries supported the best native Blackfish populations in the State, and

as a consequence...

> ***"The Government, through DCNR, has withdrawn funding at this time and requested that all work cease on the project."***[6] (1995).

Regardless of these findings the Government had Barwon Water continue with its 2007 endeavours and Barwon Water issued a Service Contract to SKM that included the investigation of 16 GL/year extraction, land acquisition, roading, pipeline easements, powerline construction, pumping station sites, purification plants etc. The budget put aside for this venture was $200,000,000.

The ensuing 2 year campaign by locals to have this stress pump conducted in a manner reflecting 2007 economic, social and environmental values as well as hydrological, saw Barwon Water withdraw its application 24 hours before a VCAT hearing. The Kawarren and Gellibrand community did not want to be subjected to the same processes and investigations that were employed for the Barwon Downs Borefield 1987-1990 stress test pump.

All of these events are comprehensively documented and referenced in earlier Otway Water Books. However, the events since August 2010 are best explained with updated extracts taken from Otway Water Book 17, pages 52-60.

Kawarren Groundwater Last Report.

When it became known that a document had been written summing up the abandoned Kawarren Borefield development, attempts were made to secure a copy.

1. Initial requests for this report fell on deaf ears and in October 2009 an FOI request asked for a final report on the "Newlingrook Groundwater Investigation."

2. The reply to this request (Barwon Water Ref: 15/260/0007C(2)), dated 17 November 2009 had this to say:
   "SKM's final report on the "Newlingrook Groundwater Investigations."
   There is no such report. The investigation was stopped before completion.
3. However, after the Kawarren investigations were abandoned SKM most definitely prepared a draft report and sent it off to Barwon Water late June/early August 2010, a year after the test was abandoned.
4. A request for this draft report was made 17 August 2010 via a phone call to Barwon Water.
5. The letter on the next page arrived as a follow up to this phone call.
6. However, this letter dated 27 August, did not arrive until after this email below and dated the 31 August, had been sent.

2/2 /

From: Mal Gardiner (otwaywater@yahoo.com.au)
To: info@barwonwater.vic.gov.au;
Date: Tue, 31 August, 2010 11:26:05 AM
Cc:
Subject: Attention Michael Watson

Dear Michael,
Following our conversation on the 17 August I would just like to remind you that you promised to look into providing me with a final report of the Newlingrook Groundwater Investigations.

I would also like you to look into providing me with a coloured copy of the 2009-2010 Barwon Downs Groundwater Licence No. 893889 Gerangamete Area report that is sent to Southern Rural Water.

Thanks,
Malcolm.

Barwon Water

Our Ref:
Your Ref: Phone query
Enquiries To: Mr M Watson
03 5226 2543

ph book
17/8/10
Michael promised to sort out the delay. There is a final report but in draft form.

27 August 2010

Mr M Gardiner
1805 Colac-Laver Hill Road
KAWARREN VIC 3249

Dear Mr Gardiner,

RE REQUEST FOR ACCESS TO REPORT

Further to our phone conversation 17 August 2010 in respect to obtaining a final copy of the SKM Newlingrook Groundwater Investigation report, I wish to advise:

- no final report on Newlingrook Groundwater Investigation has been completed
- following the Minister's agreement in June 2009 not to proceed any further with the Newlingrook investigation, Barwon Water requested its consultant (SKM) to document work completed to that date
- draft documentation of the work completed has been received – this has not been reviewed or finalised
- the review and finalisation of the draft documentation is currently not a high priority.

Please contact me on 5226 2543 if you wish to discuss the contents of this letter further in respect to the availability of the report requested.

Yours sincerely,

Michael Watson

Michael Watson
FOI MANAGER

This is most obvious as it is now February 2013 and still no report.

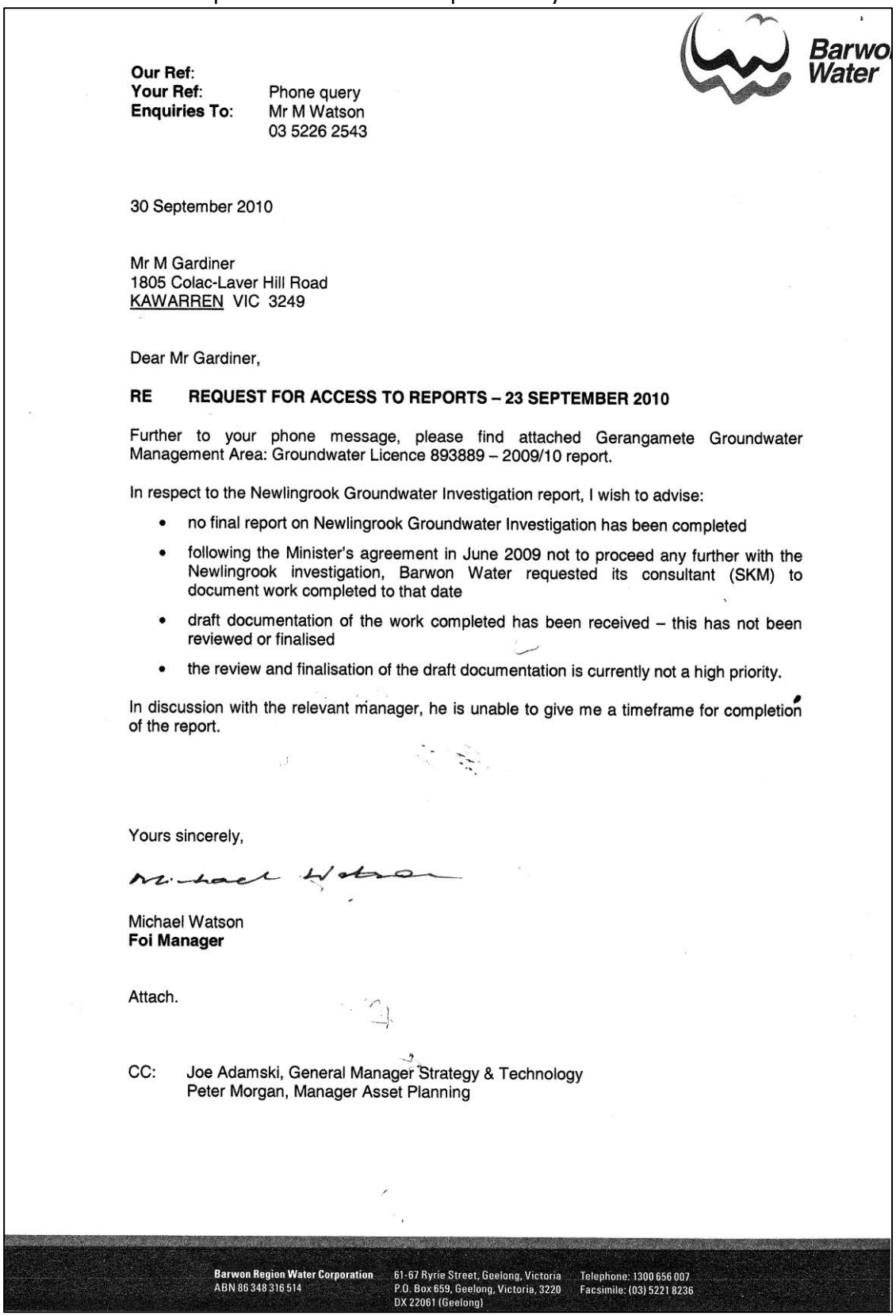
CC: Joe Adamski, General Manager Strategy & Technology
Peter Morgan, Manager Asset Planning

Spoke to Michael 31/08/010. re: this (see ph book) or see 2 pages on.

Barwon Region Water Corporation
ABN 86 348 316 514
61-67 Ryrie Street, Geelong, Victoria
P.O. Box 659, Geelong, Victoria, 3220
DX 22061 (Geelong)
Telephone: 1300 656 007
Facsimile: (03) 5221 8236

7. As a follow up, in September 2010 contact was made with Barwon Water inquiring into progress on the Newlingrook Groundwater Report and the 2009-10 Licence Number 893889 report.

8. 30 September 2010, the 2009-10 report arrived with the following letter explaining that the Kawarren report had not been completed as yet.



Barwo Water

Our Ref:
Your Ref: Phone query
Enquiries To: Mr M Watson
03 5226 2543

30 September 2010

Mr M Gardiner
1805 Colac-Laver Hill Road
KAWARREN VIC 3249

Dear Mr Gardiner,

RE REQUEST FOR ACCESS TO REPORTS – 23 SEPTEMBER 2010

Further to your phone message, please find attached Gerangamete Groundwater Management Area: Groundwater Licence 893889 – 2009/10 report.

In respect to the Newlingrook Groundwater Investigation report, I wish to advise:

- no final report on Newlingrook Groundwater Investigation has been completed
- following the Minister's agreement in June 2009 not to proceed any further with the Newlingrook investigation, Barwon Water requested its consultant (SKM) to document work completed to that date
- draft documentation of the work completed has been received – this has not been reviewed or finalised
- the review and finalisation of the draft documentation is currently not a high priority.

In discussion with the relevant manager, he is unable to give me a timeframe for completion of the report.

Yours sincerely,

Michael Watson
Foi Manager

Attach.

CC: Joe Adamski, General Manager Strategy & Technology
Peter Morgan, Manager Asset Planning

Barwon Region Water Corporation
ABN 86 348 316 514
61-67 Ryrie Street, Geelong, Victoria
P.O. Box 659, Geelong, Victoria, 3220
DX 22061 (Geelong)
Telephone: 1300 656 007
Facsimile: (03) 5221 8236

9. After weeks of hearing nothing in regard to the Kawarren report, the following email was sent.

From: Mal Gardiner (otwaywater@yahoo.com.au)
To: info@barwonwater.vic.gov.au;
Date: Sat, 13 November, 2010 3:11:09 PM
Cc:
Subject: Re: Attention Michael Watson

Dear Michael,
I was wondering how the final report of the Newlingrook Groundwater Investigations is coming along.Have your "guys' had a chance to review the draft report yet?

Cheers,
Malcolm.

10. 1 December 2010 a reply arrived.

From: Michael Watson (Michael.Watson@barwonwater.vic.gov.au)
To: otwaywater@yahoo.com.au;
Date: Wed, 1 December, 2010 9:20:22 AM
Cc: Jill.Szalnowski@barwonwater.vic.gov.au;
Subject: Request for Update.

Dear Mr Gardiner

Thank-you for your recent email seeking advice as to the reports requested.
In response I can advise the following :-

- *As previously advised in Barwon Water letters dated 17th November 2009 and 27th August 2010, no final report has or will be produced for the Newlingrook groundwater investigation as the investigation was stopped before completion.*
- *As previously advised in Barwon Water's letter dated 27th August 2010, draft documentation of partially completed work has been received. This has not been reviewed or finalised and the review and finalisation is currently not a high priority.*

Regards,
Michael

Michael Watson
Company Secretary | General Manager Finance & Administration | Barwon Water
61-67 Ryrie Street (PO Box 659) Geelong VIC 3220
T (03) 5226 2543 | F (03) 5222 6875 | M 0417 544 108 | W www.barwonwater.vic.gov.au

11. Two months later, 18 January 2011.

From: Mal Gardiner [mailto:otwaywater@yahoo.com.au]
Sent: Tuesday, 18 January 2011 8:46 PM
To: info
Subject: Re: Attention Michael Watson

Dear Michael,
Has there been any changes to the Gerangamete Borefield 2009-10 report that was sent to Southern Rural Water, since you sent me a copy of this report. In other words once the report was scrutinised by SRW did any changes have to be made?
Also has there been any progress with the SKM Kawarren Borefield report as yet?

Regards,
Malcolm.

12. 10 February 2011.

Print - Close Window

Subject:RE: Attention Michael Watson
From: Michael Watson (Michael.Watson@barwonwater.vic.gov.au)
To: otwaywater@yahoo.com.au;
Date: Thu, 10 Feb 2011 14:31:18

Dear Malcolm,

Please note that I have been advised by the relevant Managers that to date there has been no progress on the SKM Kawarren borefield report and we are still awaiting Southern Rural Water comments and feedback on the Barwon Downs Licence Report and as such it is still in draft for amendment.

Regards,

Michael

13. Four months later, 22 June 2011.

Print - Close Window

Subject:Re: Attention Michael Watson
From: Mal Gardiner (otwaywater@yahoo.com.au)
To: info@barwonwater.vic.gov.au;
Date: Wed, 22 Jun 2011 22:52:54

Malcolm Gardiner
1805 Colac Lavers Hill Road
Kawarren
Vic 3249
ph (03) 52 358 325
www.otwaywater.com.au

Dear Michael,
I was wondering how the final report of the Newlingrook Groundwater Investigations is coming along.Have your "guys' had a chance to review the draft report yet?

Cheers,
Malcolm.

14. This letter arrived 14 July 2011.

Barwon Water

Our Ref:
Your Ref: Email dated 22/06/11
Enquiries To: Michael Watson
(03) 5226 2543

14 July 2011

Mr Malcolm Gardiner
1805 Colac Lavers Hill Road
KAWARREN VIC 3249

Dear Sir,

Re: Final report – Newlingrook Groundwater Investigations

Further to your email of 22 June 2011, I wish to advise the draft reports need a significant review prior to being finalised.

The Water Resource Planning Team (who should review these reports) is fully committed up to Christmas with preparation of the Barwon Water/Victorian Government Water Supply Demand Strategy. Ideally, we will wait until after Christmas to review the draft reports prior to finalisation by SKM. This would mean reports probably finalised by around April 2012.

Yours faithfully,

Michael Watson

Michael Watson
General Manager
Finance & Administration

Barwon Region Water Corporation
ABN 86 348 316 514

61-67 Ryrie Street, Geelong Victoria 3220
PO Box 659 Geelong Victoria 3220 TEL 1300 656 007 FAX +61 3 5221 8236

www.barwonwater.vic.gov.au

15. April 2012 would be 34 months after the Kawarren project had been abandoned. With no assurances that the report would be finalised even then an FOI was sent asking for a copy of the draft report.

Barwon Water

Freedom of Information

BARWON REGION WATER AUTHORITY
61-67 Ryrie Street
PO Box 659 GEELONG VIC 3220
www.barwonwater.vic.gov.au
ABN 86 348 316 514

Telephone Local (03)5226 2595
Telephone Overseas +61 3 5226-2595
Fax No. Local (03) 5221 8236

Freedom of Information Act 1982

Access request form

NAME: MALCOLM GARDINER

POSTAL ADDRESS: 1805 COLAC LAVERS HILL ROAD KAWARREN VIC 3249

TELEPHONE: **BH** \ **AH** (03) 52 358 325

DETAILS OF DOCUMENTS REQUESTED:

(1) A copy of the SKM draft documentation of partially completed work for the Newlingrook groundwater investigations that you mentioned in an email dated Wed 1 December 2010 9:20:22 pm - that was sent to me.
(2) A copy of Barwon Water's EPA Licence.

FORM OF ACCESS REQUIRED: (Tick one)

(i) **A copy of the document(s)** ☑
(ii) **Inspection of the document(s)** ☐
(iii) **Access in another form (specify)** ☐

I understand that an application fee of $21.00 must accompany this request and that further reasonable charges for photocopying and other processing costs may be applicable. FOI fees and charges are not subject to GST.

Signature [signature] **Date** 22/11/2011

Send request and cheque/money order (payable to Barwon Water) for $21.00 to:
FREEDOM OF INFORMATION MANAGER
BARWON WATER
PO BOX 659
GEELONG VIC 3220

16. Because the last FOI application fee was $23.90 a cheque for this amount was included.
17. Even though the cheque was cashed in November it took nearly a month to process the application. This letter then arrived 9 January 2012.

Barwon Water

Our Ref: F070311/B084690
Your Ref:
Enquiries To: Trevor Little
(03) 5226 2511

3 January 2012

Mr Malcolm Gardiner
1805 Colac Lavers Hill Road
KAWARREN VIC 3249

Dear Mr Gardiner,

Re: Freedom of Information request

I refer to your request of 22 November 2011 received by Barwon Water on 24 November 2011, in which you sought access to documents under the *Freedom of Information Act 1982* ("**Act**").

Please note that s 17 of the Act sets out the requirements for a request which complies with the Act and which requirements must be satisfied before Barwon Water can process the request. One of those requirements is that the request be accompanied by the relevant fee or be waived (in whole or in part), pursuant to s 17(2A) and s 17(2B) of the Act. The current fee payable on requests made pursuant to the Act since 1 July 2011 is $24.40. Unfortunately, you have used an out of date request form to seek access and Barwon Water confirms receipt of your application fee of $23.90.

In those circumstances and pursuant to s 172(B) of the Act, Barwon Water has determined to waive the shortfall of 50c in your application fee on 23 December 2011. Barwon Water will respond to your request as soon as practicable and in any case within the time period set out in s 21 of the Act. I note the due date for a decision to be notified to you will be 6 February 2012.

Yours sincerely,

Michael Watson
FOI Manager

Barwon Region Water Corporation
ABN 86 348 316 514

61-67 Ryrie Street, Geelong Victoria 3220
PO Box 659 Geelong Victoria 3220 TEL 1300 656 007 FAX +61 3 5221 8236

www.barwonwater.vic.gov.au

18. A reply to an FOI application must take no longer than 45 days. It took Barwon Water 30 days to decide whether to ask for or waive the 50c shortfall. Once Barwon Water

agreed to the fee status on the 23 December, Barwon Water had another 45 days to make a decision. Having waited for over a 1000 days for this report, another 45 days seemed inconsequential.

19. The FOI reply arrived 7 February 2012 and stated that the draft report was exempt from disclosure under **s 30(1)** of the FOI Act. The explanation in full is as follows:

> The rest of the documents are exempt from disclosure under s 30(1) the Act because disclosure of those document would divulge matter in the nature of opinion, advice or recommendation or consultation or deliberation engaged in between officers of Barwon Water in the course of, or for the purposes of the deliberative processes involved in the functions of Barwon Water. Those functions relate to, among other things, Barwon Water's processes in carrying out its statutory functions.
>
> The documents are in draft form and have never been endorsed by Barwon Water. They were sought and provided to Barwon Water at the very early stages of Barwon Water's deliberative processes in relation to the Newlingrook Groundwater Investigation and are still pending consideration. No final decision has been made by Barwon Water in relation to the preliminary views and opinions set out in the draft documents.
>
> Disclosure of the documents would be contrary to the public interest because the documents remains in draft form and consideration of them remains incomplete. Due to the preliminary nature of the documents, they do not in any way represent the decision-making process actually being undertaken by Barwon Water. Now do they reflect any final view taken by Barwon Water in relation to the issues canvassed in the documents. It is contrary to the public interest for preliminary, unendorsed and isolated opinions and advice from officers of Barwon Water to be disclosed, as disclosure would lead to misunderstanding and confusion about Barwon Water's actual views or actions. This is particularly the case given the technical and speculative nature of the contents of the documents, which relate to theoretical future projections and modelling based on events which may or may not occur. Disclosure would also damage the integrity of Barwon Water's decision-making processes, which is contrary to the public interest.

Barwon Water FOI Ref: F070311/B084690, 3 February 2012.

April 2012.

At least there was still hope that the report would eventually be available for public viewing. With this in mind and renewed encouragement regular requests were made throughout 2012. Late in the year these emails were sent and received.

Subject: RE: Kawarren Report

From: Justin Franklin (Justin.Franklin@barwonwater.vic.gov.au)

To: otwaywater@yahoo.com.au;

Date: Wednesday, 19 December 2012 11:27 AM

Hi Malcolm,

Thanks for your emails. Sorry for the very slow response. I was a away for 3 weeks and I am still catching up on emails and other work.

SKM have advised that this report is almost complete and I hope to have it to you by the end of this week.

I will also get back to you shortly about the questions you asked in your other email.

Regards,

Justin Franklin
Water Resource Planning Coordinator | Barwon Water
61-67 Ryrie Street (PO Box 659) Geelong VIC 3220
T (03) 5226 2553 | F (03) 5226 1716 | M 0400 087 031 | W www.barwonwater.vic.gov.au

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From: Mal Gardiner [mailto:otwaywater@yahoo.com.au]
Sent: Wednesday, 5 December 2012 12:40 PM
To: Justin Franklin
Subject: Kawarren Report

Dear Justin,

Is it possible to gain a copy of SKMs report that sums up the final work on the Kawarren groundwater borefield investigation that was postponed in 2009?

Ciao,
Malcolm.

It is now February 2013 over 50 months since the Kawarren Borefield works were stopped and still no final report.

CHAPTER TEN
Future Directions

It is quite obvious that there are many issues to be resolved in relation to surface and groundwater extraction in the Otway Ranges and it is blatantly obvious that the state authorities responsible for resolving many of these are reluctant to do so. Barwon Water has made it abundantly clear that the Barwon Downs Borefield "***will remain - a backup supply***" for Geelong and in all likelihood will be linked into the augmentation within the Colac water supply system. Southern Rural Water and the State Government maintain that as long as Barwon Water complies with the licence conditions then all other considerations can wait until a review is conducted in 2019. Add to the already over allocated water resource the distinct possibility that huge demands on water from Coal Seam Gas exploration and exploitation will be made and the problems will only be accentuated.

The single most important issue to be investigated is to determine the causes of the demise of the Big Swamp and the creation of Actual Freshwater Inland Acid Sulfate Soil sites occurring in the area of influence within the residual drawdown of the Barwon Downs Borefield. The resolution of this issue may very well determine the directions that groundwater extraction within the Otway Ranges can precede.

A critical aspect of determining the impacts from groundwater extraction is the collecting of reliable comparative baseline data. The failure to do this goes back to at least 1986 and is thoroughly documented in earlier Otway Water Books. Recommendation after recommendation that would have compiled this data has been overlooked. The 2008-09 Flora Survey mirrored many of these very same recommendations and as yet still have not been implemented.

From Barwon Water's perspective the outcomes of the latest Flora Survey 2008-09 conducted by Sinclair Knight Merz (SKM) is best summed up in this Barwon Water media release (see next page)...**Flora Study Inconclusive**...

Otway Water Book 9 deals exclusively with the 2008-09 Flora Survey and highlights detrimental impacts that have resulted from groundwater extraction along Boundary Creek at Yeodene and presents an entirely different result to the published results of this Sinclair Knight Merz study done on behalf of Barwon Water.

Media release

Barwon Water

April 23, 2009
REF: 063/09

Flora study inconclusive

Barwon Water will undertake further investigations after an inconclusive study into the effects of groundwater pumping at the Barwon Downs borefield.

Independent experts conducted a two-month research project at eight separate sites to determine if the borefield operation was impacting on local vegetation.

The research team identified changes to the landscape, but reported there was no single contributing factor. Rather, there were a number of potential causes, including the prolonged drought, increased temperatures, agricultural activity, stock grazing and groundwater extraction.

Barwon Water's General Manager Capital Projects and Greenhouse Paul Northey said the study was undertaken by ecological and hydrogeological specialists, who conducted field surveys, reviewed groundwater levels and assessed new and previous data.

"They reported that given the complex interaction of many factors on vegetation, it was extremely difficult to pinpoint a single cause or activity.

"Considered in its entirety, the study was inconclusive. Accordingly, Barwon Water will initiate further investigations to see if a clearer picture can be drawn on the relative impact of the various factors," Mr Northey said.

Barwon Downs is a critical water source for greater Geelong during drought. It is currently meeting about 50 per cent of demand.

Flora studies are a requirement under the operating licence issued by Southern Rural Water. The first was conducted in 1994, with the second in 2001.

In addition, there are more than 60 observation bores monitoring water levels and salinity and there have been a significant number of related investigations.

Mr Northey said vegetation monitoring was an important element in operating Barwon Downs.

"Such studies were introduced to improve our understanding of the interaction between groundwater, surface water and the health of native vegetation in recharge areas," Mr Northey said.

"There is no question that in more recent years drought has had a significant impact, not only on vegetation but on stream flows, habitat, agriculture and so on right across the region.

"Further investigations will help determine the full extent of the drought on local flora in comparison to other possible causes," he said.

A report on the findings has been provided to Southern Rural Water.

Ends

Further information: Cassie Milner, Media Liaison Officer
Telephone: Work (03) 5226 2352, Mobile 0401 857 580.

The concept of "...***initiating further investigations to see if a clearer picture can be drawn on the relative impact of the various factors***," is quite intriguing and needs to be teased out a little.

Four days later Paul Northey features in an article in the Colac Herald.

Plan to study water

A water authority will initiate new studies into the environment impact of groundwater pumping in the Colac district after a previous study had inconclusive results.

Barwon Water is investigating the effects of pumping at Barwon Downs, south-east of Colac.

The volume of water the authority extracts from the borefield varies but it is currently pumping 40 million litres from it a day to provide about 50 per cent of Geelong's water supply.

Barwon Water says independent experts had a two-month research project at eight separate sites to determine if the borefield pumping was affecting vegetation in the area.

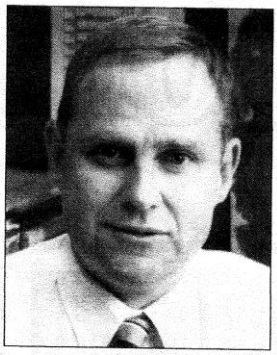
But the study's results were inconclusive.

The research team identified changes to the landscape but reported there was not a single contributing factor.

Barwon Water says potential causes for the changes include prolonged drought, increased temperatures, agricultural activity, stock grazing and groundwater extraction.

Barwon Water capital projects and greenhouse general manager Paul Northey said the study included field surveys, groundwater levels and an assessment of new and previous data by ecological and hydrogeological specialists.

"They reported that given the complex interaction of many factors with vegetation, it was extremely difficult to pinpoint a single cause or activity," Mr Northey said.



Paul Northey

"Considered in its entirety, the study was inconclusive," he said.

"Accordingly, Barwon Water will initiate further investigations to see if a clearer picture can be drawn on the relative impact of the various factors."

Flora studies are an operating licence requirement for groundwater extraction and Barwon Water has supplied a report of the latest study's findings to Southern Rural Water.

Mr Northey said vegetation monitoring was an important part of Barwon Water's work at Barwon Downs.

"Such studies were introduced to improve our understanding of the interaction between groundwater, surface water and the health of native vegetation in recharge areas," he said.

"Further investigations will help determine the full extent of the drought on local flora in comparison to other possible causes."

SOURCE: Colac Herald 27 April 2009.

This article most probably was a follow up to the media release and confirmed that new studies would be initiated in an attempt to better understand the interaction of groundwater, surface water and the health of native vegetation in the recharge area (see page 6).

The following Barwon Water media release nearly a year later, December 2010, makes no mention of the new initiatives or when they might be implemented.

Barwon Water

About us » Corporate information » Media releases » Media releases 2010 » Barwon Downs rested

Barwon Downs rested

Media release issued Tuesday 7 December 2010

Above average rain and healthy storages have allowed the crucial Barwon Downs borefield, south of Colac, to be rested.

The borefield was brought back into operation in 2006 when Geelong was in the midst of one of the worst droughts on record.

At peak production, it provided up to 70 per cent of the city's drinking water as supplies dwindled and Barwon Water was forced to introduce harsh restrictions.

But consistent rain during winter and spring has boosted storages from 32 per cent at the start of 2010 to today's 73.7 per cent, the highest since 2002.

Barwon Water's General Manager Water Systems Carl Bicknell said the soaking rain, combined with new water projects, had enabled the borefield to be taken off line.

"The borefield was Geelong's savior during the drought. In fact, it has come to the city's rescue several times since it was established more than 30 years ago.

"It is — and will remain — a back-up supply in extremely dry conditions. But the recent rain across our catchments has meant we can now rest the resource, particularly with projects such as the new Anglesea borefield and the Melbourne to Geelong pipeline extending our diverse supply network," Mr Bicknell said.

The Barwon Downs aquifer is estimated to hold more than 500,000 million litres. By comparison, Geelong's main storage at Wurdee Boluc has a capacity of 40,000 million litres.

The borefield is operated under licence from Southern Rural Water, with Barwon Water allowed to take 20,000 million litres in any one year, or 80,000 million litres over 10 years.

Between April, 2006, and when pumping ceased this year, the borefield supplied 52,439 million litres to Geelong and surrounding towns. This is 43 per cent of all water used over this period.

Unlike stock and domestic bores, which target shallow aquifers, the six production bores at Barwon Downs draw supplies from depths up to 630 metres.

Mr Bicknell said Barwon Water had compiled extensive data and knowledge on the aquifer over more than three decades.

"This information has been crucial is determining the borefield's operation under licence.

"Research and continuous monitoring at more than 50 sites indicates the current yield is sustainable. It is imperative we protect the aquifer because of its importance as a unique water source to the people of Geelong," Mr Bicknell added.

Note: Rainfall for November at West Barwon totalled 93.8mm, 7.2 per cent above the long-term monthly average. Rainfall at Korweinguboora last month topped 186mm, 185 per cent above average.

One and a half years later In May 2012 having heard nothing in regard to the new studies a request via Ian Davis of Barwon Water was sent to Paul Northey asking the following...

From: Mal Gardiner <otwaywater@yahoo.com.au>
To: Ian Davis <Ian.Davis@barwonwater.vic.gov.au>
Sent: Tuesday, 8 May 2012 2:08 PM
Subject: Ttention Paul Northey.

Ian, I was wondering whether you could pass this email onto Paul Northey for me, please.

Paul,
It has been over three years since the inconclusive Flora study was conducted in 2008 and I was wondering which further investigations have been implemented as per your statements in the Colac Herald 27 April 2009. Could I have a copy of the further investigations that Barwon Water has instigated?
Hoping to hear from you soon.
Ciao,
Malcolm.

Two reminder emails later and Tony Overman sent this reply sometime after 6 June.

Having deleted Tony's reply, I requested he send it again.

From: Mal Gardiner [mailto:otwaywater@yahoo.com.au]
Sent: Tuesday, 12 June 2012 9:05 AM
To: Tony Overman
Subject:

Hi Tony,

I have a feeling that you sent me an answer regarding the query I sent to Paul Northey regarding any work having been carried out since his statement in the Colac Herald in 2009 re the 2009 flora study. If this is the case I seemed to have misplaced it and could you send the reply to me again, please?

Regards,

Malcolm.

Tony replied the same day with two emails.

Subject: RE: Query

From: Tony Overman (Tony.Overman@barwonwater.vic.gov.au)

To: otwaywater@yahoo.com.au;

Date: Tuesday, 12 June 2012 2:48 PM

copy of email I deleted by accident

Malcolm

Here is the response I sent to you last week regarding that enquiry, which I have updated today with additional information.

"Barwon Water has been involved in working with key natural resource management agencies to establish the Corangamite Inland Acid Sulphate Soils Steering Group. This group has initiated several investigations related to acid sulphate soils in the region. The bulletin is available from the Colac Otway Shire website".

Regards,

Tony

This answer is rewritten here...

> ***"Barwon Water has been involved in working with key natural resource management agencies to establish the Corangamite Inland Acid Sulphate Soil Steering Group. This group has initiated several investigations related to acid sulphate soils in the region. The bulletin is available from the Colac Otway Shire website."***

Considering that the setting up of the Corangamite Inland Acid Sulfate Soil Multi Agency Steering Committee was an initiative brought about by persistent agitation from Stewart Anderson of the Colac Otway Shire to at least start some investigation into the problems of the Big Swamp, it was reasonable to ask after three years what Barwon Water had initiated. It was even more pressing to ask this considering that the Steering Committee was not specifically set up to look at the relationship between groundwater and impacts on native vegetation, nor causal factors of the Big Swamp's demise. The Big Swamp was regarded as only one small part of the study being carried out by La Trobe University.

"I must stress that it is a regional study being undertaken by an educational body and not an in depth investigation by an authority into any one particular identified IASS site."
(Angus Ramsey Southern Rural water email 20 January 2012 1:31 PM)

This same type of comment has often been made stressing that the Corangamite Inland Acid Sulfate Soil Multi Agency Steering Committee is not concentrating on the Big Swamp other than to determine what level of Acid Sulfate Soil site it is.

-----Original Message-----
From: Malcom Gardiner [mailto:otwaywater@yahoo.com.au]
Sent: Thursday, 7 June 2012 8:24 PM
To: Tony Overman
Subject: Studies resulting from the 2008-09 flora study

Dear Tony,
Thanks for your email today. Does that mean that this is the only follow up work that has been done after the 2008-09 flora study.?
As you may recall I was asking of Paul Norhtey what the studies are that have been implemented following his 2009 article in the ColacHerald stating that there would be follow up studies as a result of the inconclusive results of the 2008-09 flora study.
Regards,
Malcolm.
Sent from my iPad

Subject: RE: Studies resulting from the 2008-09 flora study

From: Tony Overman (Tony.Overman@barwonwater.vic.gov.au)

To: otwaywater@yahoo.com.au;

Date: Tuesday, 12 June 2012 2:44 PM

Hi Malcolm,
In addition to the acid sulphate soils studies underway, I can also advise that Barwon Water has commenced a review of its monitoring plan for the Barwon Downs borefield to improve information on the ecological and hydrogeological aspects of the borefield operation. It is anticipated that this will result in an expansion of monitoring activities beyond that required to be undertaken by Barwon Water in its groundwater licence. A community reference group with an independent chair will be formed later this year to monitor its implementation.

Regards,
Tony

Monitoring its implementation may be necessary but surely this is Southern Rural Water's task or the independent chair. For once it would be appreciated if local input was asked for in the initial planning, review and scoping out stages of the project. As for a community reference group and meaningful input into the directions the project takes, the outcomes learnt from past experience involving community input, that could best be described as tokenism, are not that encouraging.

Soon after Tony's email a media release reflected the same sentiments.

Barwon Water

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Barwon Downs review

Media release issued Thursday 21 June 2012

Barwon Water will undertake a comprehensive review of its Barwon Downs borefield monitoring program.

The corporation said today the review would look at potential improvements in monitoring as well as provide vital data for future operations.

The borefield is a critical water source during prolonged dry spells.

At the height of the recent drought, the worst on record, it provided up to 70 per cent of the city's drinking water when storages plummeted to 14 per cent.

The borefield was taken off-line in 2010 and has shown significant signs of recovery.

Barwon Water is currently scoping the review, including whether investigations into more advanced monitoring is required.

The review is expected to consider recent acid sulphate soil and peat fire investigations, fish and macro invertebrate surveys and stream flow and water quality research.

Barwon Water Interim Managing Director Joe Adamski said while the current program was best practice at the time of the initial licence application, new monitoring methods would be considered.

"The review will focus on the ecological and hydrogeological aspects of the borefield operations and look at expanding the current monitoring program," Mr Adamski said.

This information would be considered leading up to an application to renew the operating licence in 2019. Community engagement also would be a critical element in this process, he said.

"The borefield is part of Geelong's diverse supply system and has proven its worth time and again. Indeed, it was the city's savior during the drought. Without the resource, Geelong faced the very real risk of running out of water in 2007."

The aquifer from which the water is drawn is estimated to hold more than 500,000 million litres. By comparison, Geelong's main storage at Wurdee Boluc has a capacity of 40,000 million litres.

The borefield is operated under licence from Southern Rural Water, with Barwon Water allowed to take 20,000 million litres in any one year, or 80,000 million litres over 10 years.

Between April, 2006, and when pumping ceased in 2010, the borefield supplied 52,439 million litres to Geelong and surrounding towns. This was 43 per cent of all water used over this period.

Unlike stock and domestic bores, which target shallow aquifers, the six production bores at Barwon Downs draw supplies from depths up to 630 metres.

Page last updated Monday 25 June 2012

It is now coming up to 4 years since the Paul Northey article that stated Barwon Water would initiate new studies into the environmental impact of groundwater pumping in the Colac district (**Colac Herald 27 April 2009.**)

CONCLUSION, not just yet.

Stalling tactics again, incompetence, lack of caring and or funding, ignorance of responsibilities and or accountability on State Government Agencies, wary of local input– whatever - it is quite clear that the investigation of the Big Swamp and or impacts from groundwater extraction at the Barwon Downs Borefield are extremely low priorities and look like never being seriously considered as issues that will be pursued with any vigour.

No matter the short term let alone the long term impacts, as long as there remains water to be mined it will be mined. Unfortunately, the rush to provide water for anthropogenic requirements concentrates on the hydrology and hydrogeology aspects of water extraction to the detriment and preclusion of many other considerations such as land degradation, biodiversity, recreational and social values. To make sound management decisions there should be a range of "experts" involved including local residents, a sociologist, zoologist, botanist, microbiologist, geomorphologist, chemist, anthropologist, economist and a local government representative. All of these areas are highly specialised and involve skills and knowledge acquired over a long period of time and experience. The applicability of each of these areas is neither static nor can they be excluded from long term human welfare considerations.

Review of the Barwon Downs Borefield management, administration and licence conditions is long overdue. With the borefield out of operation and only to be re-instated in the event of a drought the six year wait before the licence is renewed in 2019 seems to be a waste of time in which meaningful and unhurried review could take place.

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