

# Difficulty Listing Impacts Created from Groundwater Extraction at the Barwon Downs Borefield.

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*I was asked which is  
worse, ignorance or  
apathy, and all I could  
say was I don't know  
and don't care.*



## OTWAY WATER BOOK 48

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[www.stopgroundwatermining.com.au](http://www.stopgroundwatermining.com.au)

May 2018

Malcolm Gardiner

Email: [otwaywater@yahoo.com.au](mailto:otwaywater@yahoo.com.au) [www.otwaywater.com.au](http://www.otwaywater.com.au)

## Introduction.

Since late in 2017 there has been much discussion at Barwon Water's Groundwater Community Reference Group (CRG) and Public Forum meetings also held by Barwon Water, referring to remediation that will be conducted in Phase One of Barwon Water's three phase future works regarding the Barwon Downs Borefield operations.

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Once talk of remediation was mentioned it has been asked many times what is to be remediated. Believing that there are multiple impacts requiring remediation the question is, has a list of things requiring remediation been compiled. Reluctance. No one was prepared or seemed to be able to cite any impact other than those of the Big Swamp Wetlands and Boundary Creek. As a consequent letters were sent to Water Minister Lisa Neville, Southern Rural Water Officer Angus Ramsay and General Manager of Barwon Water, Tracey Slatter.

## Request for Answers to Tracey Slatter.

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Hello Tracey,

The Barwon Downs Borefield has been in operation for over three decades now and I believe Barwon Water plans little to no extraction during a remediation period in phase one of the new licence.

At this stage and even after numerous requests during the public consultative process a list of what has to be remediated has not been given.

Considering there have been so many extensive studies conducted over the years starting way back in the 1980s,

"...monitoring impact and changes with regular reports and upgrades." (Barwon Water to NREC, August 1988) and

"as indicated previously in evidence to the committee, the Board wishes to ensure that environmental needs are adequately recognised and safeguarded in any water resource development that it may seek to undertake." (BarwonWater to NREC hearing, 1989),

this remediation list should be easily compiled, if not already in existence.

My requests are:

1. Do you have a list of the impacts caused by extraction at the Barwon Downs Borefield?
2. Is there a list of which things are to be remediated, and
3. If you do have these two lists could you send me copies, please?

Kind regards,  
Malcolm.

Sent from Yahoo Mail for iPad Emailed 11/02/2018

## Reply from Tracey.

Dear Malcolm,

*Email Reply 21/02/2018*

Thank you for your email dated 11 February.

As you correctly point out Barwon Water has developed a proposed management plan based on outcomes the community identified as important for the next licencing period.

This plan aims for us to work with our community and stakeholders over the next 15 year journey and will include the three phases of remediation, adaptive yield assessment and long term sustainable operation.

Barwon Water is committed to remediation efforts in the Boundary Creek catchment regardless of the outcome of the licence application.

We have also committed to not using the borefield again, other than if necessary for operational maintenance purposes, until the current licence application is resolved.

Further to this, as part of the licence application we will propose to reduce the reliance on the borefield during the first two phases of remediation and adaptive yield assessment. This will be assisted by shifting the borefield's use from the first to the last alternate source ie after the Anglesea borefield and the Melbourne Geelong Pipeline.

In response to your information requests:

1. Do you have a list of the impacts caused by extraction at the Barwon Downs Borefield?

In 2016, a major update of the Barwon Downs groundwater model was complete. The updated model can separate groundwater extraction and natural climate fluctuations to simulate historical impact. The technical reports (which can be found on the Have Your Say website) concluded:

- Barwon Water's pumping from the Barwon Downs borefield over the past 30 years is the main cause of a reduction in baseflow (groundwater contribution to streamflow) in the lower reach of Boundary Creek increasing the frequency and duration of no flow periods.
- No other rivers or creeks have been impacted as significantly as Boundary Creek by the operation of the bore field.
- Operation of the borefield has likely resulted in a minor reduction in base flow in a small section of the Gellibrand River (in the order of 0.3ML/day or 0.8% of low flows). Dry climate conditions have caused a greater reduction in base flow (in the order of 0.6ML/day or 1.6% of low flows) according to the groundwater model.

- Shallow aquifers across most of the study area have not been significantly influenced by operation of the bore field suggesting that there is very little impact to vegetation outside the Boundary Creek catchment.

2. Is there a list of which things are to be remediated

As outlined at the workshops sessions Barwon Water is keen to develop the remediation approach with members of the catchment community. While there is a report that outlines a proposed approach to remediation, Barwon Water would like to test this approach further. To this end a Boundary Creek remediation working group will be established. The purpose of this working group is to actively engage with Barwon Water to jointly design a remediation plan for Boundary Creek and Big Swamp via a series of workshop sessions. An Expression of Interest will be advertised soon for interested community members to participate in this process. We envisage this process running from March to September, 2018.

The remediation approach under review includes the information presented to the Community Reference Group in October 2017.

Ongoing monitoring will continue with emphasis placed on sites that the groundwater model has identified at risk of impact from future pumping. These include:

- Gellibrand River - recommend site specific study is undertaken south of Kewarren to confirm the effectiveness of the alluvial aquifer in maintain base flow to the rivers and presence of high value GDEs. Additional groundwater or streamflow monitoring and vegetation mapping is likely to be required as part of this study.
- Barwon River East and West Branch south east of the Bamba Fault – recommend site specific study to confirm the effectiveness of the alluvial aquifer in maintaining base flow to the rivers and presence of high value GDEs. Additional groundwater or streamflow monitoring and vegetation mapping may be required as part of this study.
- Ten Mile Creek – Reinstate stream flow gauge
- Yahoo Creek – Reinstate stream flow gauge
- Barongarook Creek – recommend site specific study to confirm presence of high value GDEs. As part of this study additional groundwater monitoring and stream flow monitoring may be recommended.
- Porcupine Creek – review the need for an additional PASS site for ongoing monitoring.

3. If you do have these two lists could you send me copies, please?

All reports have been circulated to all Community Reference Group members and are available on the Have You

Say webpage – if you require a hard copy of any reports please let me know and I will organise to post it out.

Regards

**Tracey Slatter**

**Managing Director | Barwon Water**

55-67 Ryrie Street (PO Box 659) Geelong VIC 3220

T (03) 5226 2544 | W [www.barwonwater.vic.gov.au](http://www.barwonwater.vic.gov.au)

It would appear there is no list of impacts or a list of things for remediation other than the Big Swamp Wetlands and Boundary Creek. Even the impact within the wetlands and the Boundary Creek Catchment still have not been listed.

Tracey states there is a small impact on the Gellibrand River but...  
no impact anywhere else.

The rest of the letter explains that a working group will be set up to oversee the remediation of the Big Swamp Wetlands and Boundary Creek. Further monitoring will be conducted at some other locations while others may be or are likely to be monitored and studied.



## Request for Answers to Angus Ramsay.

Hello Angus, *Email Sent 11/02/2018 to AR of SRW.*

The Barwon Downs Borefield has been in operation for over three decades during which time a cone of depression has been created that continues to spread its area of influence. Leading up to the renewal of the extraction licence in 2019 Barwon Water appears to be planning no extraction or at least low extractions during a remediation period in the life of a renewed licence.

At this stage and even after numerous requests during the public consultative process a list of what has to be remediated has not been given.

Considering there have been so many extensive studies conducted over the years starting way back in the 1980s,

"...monitoring impact and changes with regular reports and upgrades." (Barwon Water to NREC, August 1988) and

"as indicated previously in evidence to the committee, the Board wishes to ensure that environmental needs are adequately recognised and safeguarded in any water resource development that it may seek to undertake." (BarwonWater to NREC hearing, 1989),

this remediation list should be easily compiled, if not already in existence.

My requests are:

1. Does Southern Rural Water have a list of the impacts caused by extraction at the Barwon Downs Borefield?
2. If SRW does have a list could you send me a copy, please?
3. Does SRW know of a Barwon Water list of impacts, and,
4. if so which things are to be remediated?

Kind regards,  
Malcolm.

Sent from Yahoo Mail for iPad

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## Reply from Angus.

Hi Malcolm,

I have passed this onto management for a response. You'll excuse me if I don't respond directly. (Not on a high enough pay grade to deal with this request with the application so close.)

Cheers

**Angus** *Email Reply. 13/02/2018*



## Reply from Southern Rural Water.

Print window

<https://mail.yahoo.com/d/folders/1/messages/19254>

SRW

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Subject: Remediation of impacts Barwon Downs Borefield.

From: ChrisH@SRW.com.au

To: otwaywater@yahoo.com.au

Cc: TrevorM@SRW.com.au

Date: Wednesday, 14 March 2018, 7:58:33 am AEDT

Dear Malcolm,

Thank you for your email to Angus Ramsay on 11 February 2018 and also the discussions that we had recently at Colac.

We know that groundwater extraction impacts the groundwater levels in the aquifer and based on the recent technical work undertaken for Barwon Water we better understand the impacts on the baseflow in Boundary Creek and the Gellibrand River. The technical work indicates that groundwater extraction is the main cause of the reduction in base flow in Boundary Creek and the resulting lack of flow causes drying of the swamp and activation of acid sulphate soils.

We have had discussions with Barwon Water about the remediation plans being considered for Boundary Creek and the Big Swamp and this will continue. We will soon be meeting with DELWP and the CMA to discuss the renewal process, which will also include discussion on the remediation of the Big Swamp.

Assessment of the known and potential impacts of groundwater extraction from the Barwon Downs Borefield will be undertaken during the renewal application assessment process. In order to get all of the relevant issues on the table for consideration during the assessment process SRW will consult with the community and stakeholders. This consultation will commence in the near future. I appreciate that you highlighted a number of issues when we recently met with you and other members of LAWROC. There will be many more opportunities for discussion and if you would like to provide a written submission (and also the technical studies that you mentioned have been commissioned by LAWROC) it will certainly provide valuable input into the licence renewal assessment process.

Trevor Mc Devitt will be leading the renewal application process so please refer future questions to Trevor in the first instance. His details are below:

**Trevor McDevitt**

Manager Applications - Groundwater & Rivers | Southern Rural Water  
Managing Water. Serving Communities

ph: 03 5564 1701 m: 0438 681 219 w: [www.srw.com.au](http://www.srw.com.au)

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3/14/2018, 2:30 PM

It took over two months for this reply to “filter” through and as with the Barwon Water reply the only things to be listed for remediated included the Big Swamp and Boundary Creek. As for a list of other impacts none was provided. It would appear from a Southern Rural Water perspective that no other impacts exist. However, an effort will be made some time in the future as part of the groundwater extraction licence renewal process.

***“Assessment of the known and potential impacts of groundwater extraction from the Barwon Downs Borefield will be undertaken during the renewal application assessment process.”***

This seems quite incredible considering:

1. Major groundwater extraction has been taking place for over 30 years.
2. Readily available data indicating major impacts has been collected for a similar period.
3. Southern Rural Water is the overseer, “policeman” and regulator and still has little idea of what has been taking place.

And, to go on and state... ***“In order to get all of the relevant issues on the table for consideration during the assessment process SRW will consult with the community and stakeholders.”***

Considering all of the community outrage at the manner in which the management of the Barwon Downs Groundwater extractions have been managed, and as the regulator of this situation, Southern Rural Water should be right across all aspects of this extraction licence. This should include familiarity with a list of impacts created.

It is also incredible to think that the work a consultative Community Reference Group that has been meeting on a regular basis for five years, looking at renewal to the groundwater extraction licence, will be repeated with another round of community consultation.

Maybe Southern Rural Water is not aware of what is taking place and the impacts resulting from the mining of groundwater at the Barwon Downs Borefield, but there can be no doubt that members of the Community Reference Group, could list many more impacts from groundwater extraction other than the ones being experienced along Boundary Creek and in the Big Swamp Wetlands.

## Request for Answers to the Water Minister.

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Hello Minister,

The Barwon Downs Borefield has been in operation for over three decades during which time a cone of depression has been created that continues to spread its area of influence. Leading up to the renewal of the extraction licence in 2019 Barwon Water appears to be planning no extraction or at least low extractions during a remediation period. At this stage and even after numerous requests during the public consultative process a list of what has to be remediated has not been given.

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"...monitoring impact and changes with regular reports and upgrades." (Barwon Water to NREC, August 1988) and

"as indicated previously in evidence to the committee, the Board wishes to ensure that environmental needs are adequately recognised and safeguarded in any water resource development that it may seek to undertake." (BarwonWater to NREC hearing, 1989),

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3. Do you know of a Barwon Water list of impacts , and,
4. if so which things are to be remediated?

Kind regards,  
Malcolm.

Sent from Yahoo Mail for iPad

*Emailed 11/02/2018*

## Reply from the Minister.



Department of Environment,  
Land, Water and Planning

PO Box 500, East Melbourne,  
Victoria 8002 Australia  
delwp.vic.gov.au

Mr Malcolm Gardiner  
otwaywater@yahoo.com.au

Ref MIN040274  


Dear Mr Gardiner

**BARWON DOWNS BOREFIELD**

Thank you for your email of 11 February 2018 to the Hon Lisa Neville MP, Minister for Water about the Barwon Downs Borefield. As this matter is in my area of responsibility, the Minister has asked that I respond on her behalf.

The Yeodene Swamp Study was released by Barwon Water in 2017. Within section 5 of the study remediation plans are described. The Yeodene Swamp Study can be accessed at the following website: <https://www.yoursay.barwonwater.vic.gov.au/barwon-downs-borefield-licence-renewal>.

Southern Rural Water (SRW) is the responsible authority for assessing Barwon Water's licence renewal application. SRW will consult with the wider community as part of the process for considering an application by Barwon Water to renew its groundwater licence. SRW are still finalising the licence renewal consultation and engagement plan, and aim to establish a Community and Stakeholder Reference Group with broad community representation.

Barwon Water are currently establishing a Boundary Creek remediation working group. The working group will be integral to the development of Barwon Water's remediation plan for Boundary Creek and Big Swamp. Barwon Water hopes for this process to run from March to September 2018. I encourage you to use the opportunity afforded by Barwon Water and request membership of the Boundary Creek remediation working group.

If you would like more information about this matter, or would like to gain membership to the Boundary Creek remediation working group, please call Joanna Lee, Senior Engineer, Water Resources Planning on (03) 5226 2471 or email [joanna.lee@barwonwater.vic.gov.au](mailto:joanna.lee@barwonwater.vic.gov.au).

Thank you for raising this matter with the Minister.

Yours sincerely



**Grace Mitchell**  
Acting Executive Director, Water Resource Strategy

27/2/18  
Contained in Email 27/02/2018

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The Minister's representative could not list the impacts nor the those things to be remediated but did refer to a Barwon Water report and where this report could be sourced. The letter made it quite clear that the responsibility to adequately deal with past, present and future groundwater licence issues rests

with Southern Rural Water. As part of SRW's actions this authority will be setting up a Community and Stakeholders Reference Group some time in the future. Another Community reference Group!!

Also, the Minister's reply includes, "*Barwon Water are currently establishing a Boundary Creek remediation working group.*" This Group has now been formed and I am informed its earliest work will be to establish a comprehensive set of analytical data regarding what the various characteristics of the wetlands are. Things such as depth of the peats; chemical composition; cross sectional profiles and connectivity to the Lower Tertiary Aquifers. Hopefully the catchment of Boundary Creek will be dealt with in a similar. These things are welcomed.

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As reflected in the three email replies, as far as the authorities are concerned, every angle is covered.

However, the same is not being said by landholders and those communities being impacted. There is the fear that the 2019 groundwater extraction licence is going to wash over local community concerns just as they did back when the 2004 licence was renewed. Concerns only different to the ones in the early 2000s by magnitude and number. Assurances of proactive protection of rights and environmentally responsible management in the most part never came to pass.

## **Known Impacts from Groundwater Mining.**

1. Big Swamp devastation.
  - 1.1.1. Perennial wetlands dried out.
  - 1.1.2. Previous fire proof area turned into a permanent fire hazard.
  - 1.1.3. Release of carbon and other gases to the atmosphere.
  - 1.1.4. Creation of one of the highest Inland Freshwater Actual Acid Sulfate Soil sites in Australia.
  - 1.1.5. Pollution and contamination of aquifers.
  - 1.1.6. Vegetation shift to species tolerant to much drier conditions.
  - 1.1.7. Acid water and heavy metal releases into the Barwon River Catchment.
  - 1.1.8. 30 KM fish kill down the Barwon River.
  - 1.1.9. Stygofauna compromised.
2. Soaks, springs and creek drying up.
3. Farmland viability threatened.
  - 3.1.1 Actual Acid Sulfate Soils resulting in unproductive soils.
  - 3.1.2 Stock and Domestic water rights lost. Through water contamination of cessation of creek flows.



- 3.1.3 Infrastructure degraded.
- 3.1.4 Spring fed dams compromised.
- 3.1.5 Summer grassland pick on river flats decreased.
- 3.1.6 Fire retardation ability of these same flats lessened.
- 4. Boundary Creek Catchment.
  - 4.1.1 Constant flow from Artificial Supplementary Flows in the upper reaches of Boundary Creek have created a different creek and riparian vegetation ecosystem.
  - 4.1.2 The lower reach of Boundary Creek has large periods of no flow.
  - 4.1.3 Loss of platypus, fish, yabbies and other freshwater species.
  - 4.1.4 Riparian and Groundwater Dependent Ecosystems within the Boundary Catchment have been dried out, devastated or compromised.
- 5. Dubious reports have been produced that are being used as reference and or basis for present and future water resource management decisions.
- 6. The Lower Tertiary Aquifers are being mined.
- 7. The extremities and area of impact are continuing to expand.
- 8. A cone of depression has been created under Kawarren.
- 9. Groundwater flow paths have been seriously altered.
- 10. Baseflows in waterways of the upper Gellibrand River Catchment have lessened.
- 11. Deterioration of trust and faith by local communities in Barwon Water's motives, actions and ability to environmentally and agriculturally manage water resources in the area (see Page 14 for an example of local community disdain).

### **Unknowns that could be impacting the region.**

- 1. Salinity movement within the earth structures under changing hydrogeological conditions.
- 2. Vertical leakage and movement of groundwater.
- 3. Source of the recharge waters achieving an 80% recovery near the borefield as described by Jacobs.
- 4. The time needed for aquifer recovery.
- 5. The impacts that will continue to manifest during any recovery period.
- 6. The cost of remediation, recovery and or future groundwater extraction.

(On 22 August 2018 at the Barwon Water's remediation of the Big Swamp Wetlands meeting, it was asked to list the impacts within the area of drawdown influence from the Barwon Downs Borefield. Some were mentioned

but not all. This list on pages 13 and 14 was sent to Barwon Water in an email on the 24 August.)

### **Local Community Disdain.**

There are numerous examples of why local community members impacted from groundwater extraction influences find it most difficult to accept that a fair and balanced progress can be made based on trust, accuracy and co-operation. The following mis-information is one example.

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On the 16<sup>th</sup> July The Chairs of Barwon Water, Southern Rural Water and the Corangamite Catchment Authority met with the President of the LAWROC Landcare Group and two members of LAWROC. This meeting was requested by Jo Plummer the Chair of Barwon Water. A very positive and welcomed move. In the follow up to this meeting and in the covering letter, dated 9 August 2018, Jo spoke about *“rebuilding trust”*

*“Barwon Water’s ongoing commitment to building a positive and collaborative relationship with LAWROC and the local community in the years ahead”* etc.

However, in the very first reply to questions asked at this meeting the whole fabric for any movement forward takes several gigantic blows.



## Response to questions

### 1. Location of vegetation surveys

*Can these be taken from the same place as has previously been taken to ensure consistency and historical context?*

#### Response provided by Barwon Water

Adding extra locations for vegetation surveys, and consideration of historical sites, can be something the community working group (to be established by Barwon Water in the proposed new licence period) provides advice on.

1. The existing sites were established in 2014 following engagement with the Barwon Downs Community Reference Group.

Historical data, including old reports, sites and past surveys were considered by Jacobs and helped inform the selection of the new vegetation sites. Three old sites were kept and eight replaced as part of this process. They were replaced because they were not located near monitoring bores and were not able to be used to determine the link between vegetation dependency and groundwater levels.

### 2. Coordination of water sampling and testing

*We discussed LAWROC working in partnership with Barwon Water to enable coordination of testing which would result in greater trust, productive discussion on the result rather than the validity of the process and savings for LAWROC to invest in more value adding activities.*

#### Response provided by Barwon Water

Barwon Water welcomes the opportunity to work in partnership with LAWROC and other stakeholders to agree on the scope of future water sampling and testing with the intent of working from the same data set.

Our proposed licence application commits us to "building knowledge and trust in the science with the community" by establishing a citizen science program to build a common database of shared information.

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Enabling regional prosperity

1, 2, 3

## The Blows

1. The Barwon Water Groundwater Community Reference Group (CRG) met for the first time in October 2013. For the first year this group met on a weekly basis. Late in 2013 a discussion regarding the Supplementary Flows released into a tributary of Boundary Creek was dealt with. It was proposed that these flows be turned off, no longer buffering any impact from groundwater extraction impacts that may be occurring in the area. The idea being that a true indication of groundwater extraction impact would be realised. The reply given was that this was not possible as no change to the 2004 licence conditions could be made until June 2019 when the licence was up for renewal. The CRG accepted this ruling and moved on.  
However, in 2015 Barwon Water tabled a vegetation survey report of 14 sites on which a new baseline of data was to be used determining the amount of groundwater impact in the area. Two decades of vegetation

monitoring wiped out in one single blow. The most alarming aspect of this being that Barwon Water had been in negotiations with Southern Rural Water since 2012 to change the 2004 licence conditions allowing the original eight 2004 vegetation sites to be changed.

To state there had been engagement with the Community Reference Group regarding these changes is drawing an extremely long bow and giving a totally wrong impression of the way things had developed with this licence condition change. There had been no community consultation at any level regarding the 2004 licence vegetation survey site changes and the first the CRG knew of these changes was after the 2014 survey had been completed and tabled in 2015.

2. The first attempt at surveying vegetation sites that could be impacted from groundwater extraction, was carried out in 1986. Vegetation surveys have always been part of the lead up to any groundwater extraction requests by Barwon Water.

Year	No of sites	Lead up to extraction	2004 Licence Condition	2004 Licence Change	Community Consultation
1986	general	yes			yes
1992	82	yes			no
2002	24	yes			no
2008	8		yes		no
2014	14	yes		yes	no
2016	14	yes		yes	no

The 1992 survey was geared to finding Groundwater Dependent Ecosystems that have a connection to extractions from the Barwon Downs Borefield.

The 2002 survey was to re-examine those sites from the 1992 survey deemed to be most likely connected to the Lower Tertiary Aquifers.

18 months after the 2014 vegetation survey another visit to the 14 sites in 2016 concluded *“There is no evidence that groundwater extraction from the Barwon Downs borefield has had a negative impact on vegetation activity or condition.”*

Data from pre 2014 vegetation surveys seriously questions the relevance of this statement.

Returning to Jo Plummer's statement that the fourteen 2014 vegetation sites included 3 old locations while 8 were replaced, is difficult to follow. If the 2004 licence is the reference point for these changes then no sense can be made of Jo's statement regarding the changed sites.

3. Justification for moving vegetation sites so they could be closer to monitoring bores does not stand up to scrutiny either. The **new** Big Swamp Wetlands vegetation site has been located over half a kilometre from the monitoring bores. This is just one of the glaring inconsistency with Jo's statement regarding sites change justification.

## CONCLUSION

From the earliest days of groundwater extraction at the Barwon Downs Borefield very little attention has been given to a comprehensive list of risks and dangers associated with pumping. Overseas water management resulting in the creation of desert type conditions, should have been taken into account and measures put in place to avoid any chance of the same thing happening in the Barwon River Catchment.

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Not only have the authorities driving the exploitation of our water resources failed to take note of history, there would appear to be a serious collective case of “ostrich” type behaviour. Not being able to list any more than two impacts or provide a realistic list of things to be remediated, let alone knowing anymore than a scant amount about **what is** being remediated, is paramount to burying one’s head in the sand. However, it must also be said that many efforts have been made to turn things around since the recently appointed Barwon Water management. Past management decisions have created a legacy that is extremely hard to come to terms with and even harder Fix. It will be most interesting to see Barwon Water’s 2019 groundwater renewal application and how determined Baron Water is prepared to right past wrongs.