

# Otway Water

## Book 42F

### Scope Issues

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## State Labor Government Pledge.

*“The Andrews Labor Government is protecting the health of Otway waterways by ensuring Barwon Water **repair the environmental impacts of past groundwater extractions in the region.**”* Media Release, Hon Lisa Neville, 9 August 2018.

## The Problem Identified

It has finally been accepted that the extraction of groundwater from the Barwon Downs Borefield has been unsustainable and is responsible for observable impacts.

*“...I have formed a view and I am satisfied that a process or activity which is being/or has been carried out at the property has **caused a measurable negative environmental impact on Boundary Creek, Big Swamp and the surrounding environment and legal enforcement of protective works is required under s78(1).**”* Ministerial Notice 1.6.

The “property” has been defined at the start of the s78 Notice as the Barwon Region Water Corporation (Barwon Water) Gerangamete Groundwater Field, operating under licence BEE032496.

## Fully Remediate.

*"I understand that it is Barwon Water's intention to **fully remediate** Boundary Creek, Big Swamp and the surrounding environment."*

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03/09/2018. Hon Lisa Neville letter to Keith Armistead, Re: CC0103799

## Full Extent of Impacts Identified.

The Hon. Lisa Neville states *"**There will be community input into the remediation plan that will also ensure the full extent of environmental impact is identified and that they are addressed by the remediation plan.**"*

Hon Lisa Neville Ref: ADQ001505, reply to Samantha Dunn, Adjournment Debate Matter, 9-10-18.

## Area of Impact.

As part of the s78 Notice the area of impact has to be defined. “*The s78 notice issued by Southern Rural Water defines the area as ‘Boundary Creek, Big Swamp and the surrounding environment’ with directions for Barwon Water to further define and describe the area as part of the ‘scope of works’ document.*” Barwon Water’s response to the s78 Notice.

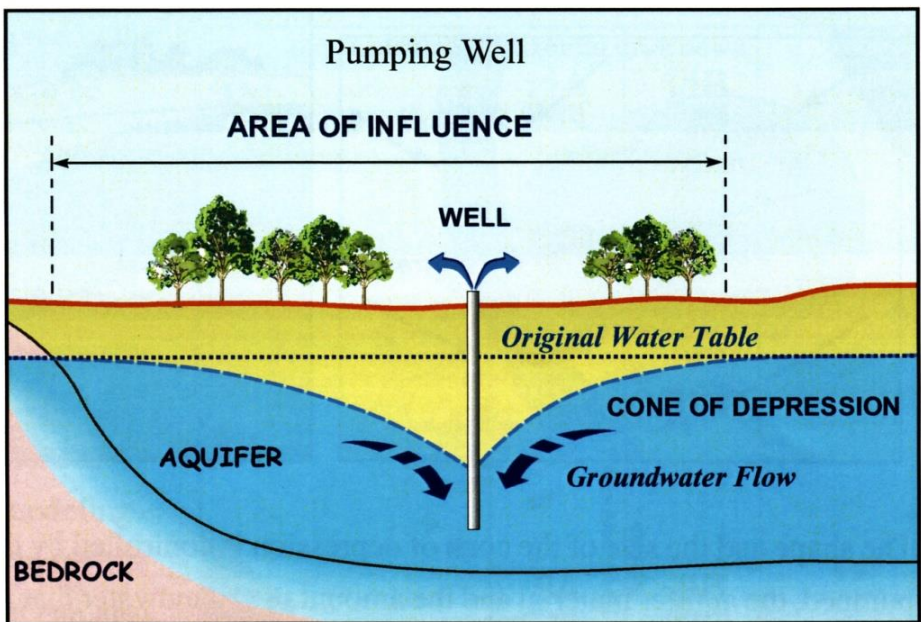
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At a meeting set up by Hon. Lisa Neville (26 October 2018 at 8 Nicholson Street, Melbourne) to speak with DELWP staff Grace Mitchell, Randal Nott, Patrick O’Halloran and Richard Marks, defining the area of impact was discussed. It was agreed that the area and impacts may vary over time, and, this has to be taken into consideration when developing a Plan – both the timeframe and impacts are dynamic.

## Impact Area of Influence from the Barwon Downs Borefield.

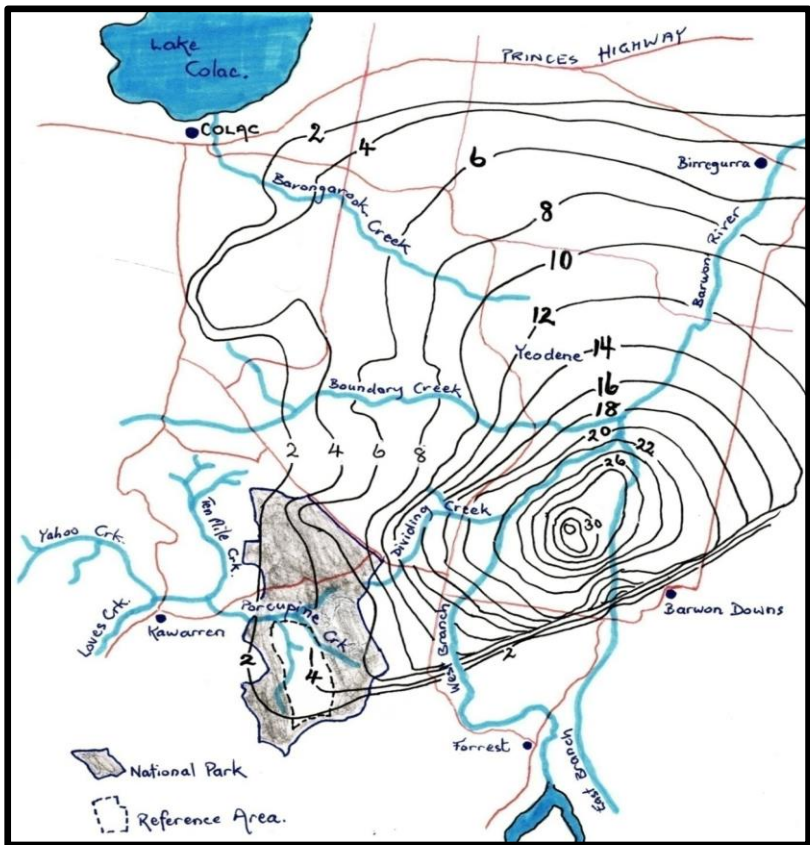
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### Schematic Area of Influence.



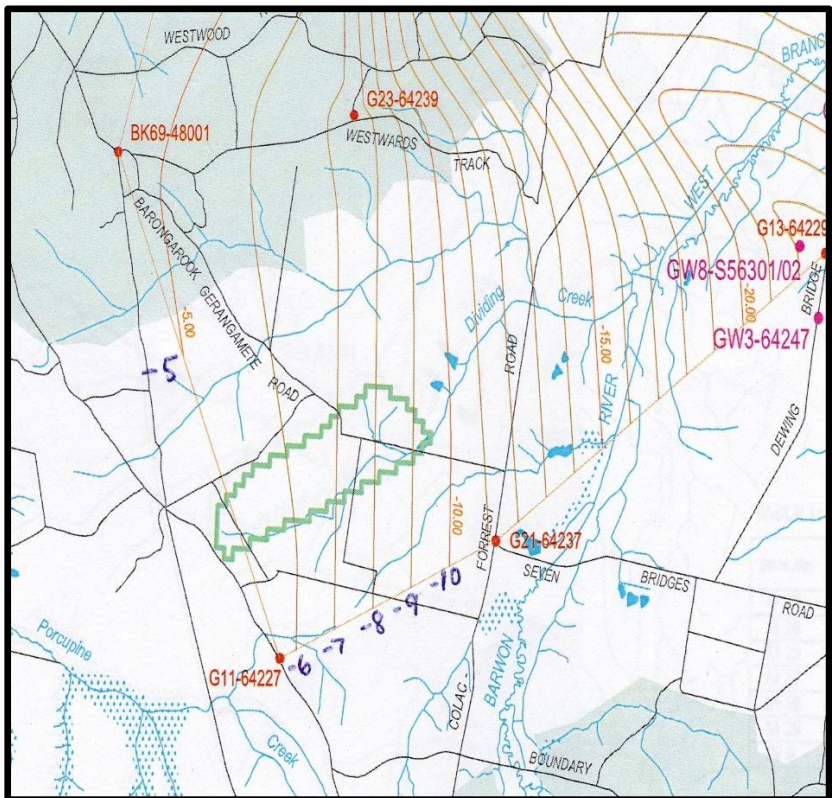
**SOURCE:** The Centre for Groundwater Studies, Blackwood South Australia.





**Map 1 Early 2000s.**

**SOURCE:** Map Provided by Barwon Water in the Lead Up to the 2004 Groundwater Extraction Licence at Barwon Downs.



**Map2 Pebble Point Residual Drawdown 2018.**

**SOURCE:** Barwon Water's 2017-2018 Gerangamete Groundwater Report to Southern Rural Water.

## Full Extent of Impacts Identified.

*“Barwon Water is responsible for **all** the impacts deemed to have been caused by the operation of the borefield...”* Hon Lisa Neville, 9/10/2018, Ref: MIN049314.

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The Hon. Lisa Neville states *“There will be community input into the remediation plan that will also ensure the full extent of environmental impact is identified and that they are addressed by the remediation plan.”*

Hon Lisa Neville Ref: ADQ001505, reply to Samantha Dunn, Adjournment Debate Matter, 9-10-18.

*“...Barwon Water is to describe the environmental outcomes for the waterways to be achieved by the remediation plan.”* Grace Mitchell DELWP Ref: MIN049111, 15-10-2018.

The conditions in the s78 Notice are important *“...for the protection of the environment and to reassure the community that Barwon Water must address the impact of its groundwater extraction.”* Barwon Water’s response to the s78 Notice.

# Impacts from the Barwon Downs Borefield Extractions.

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## 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.
- 1.1.10. Soil composition drastically changed.
- 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 and 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.

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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.

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7. The extremities and area of impact are continuing to expand.

8. A cone of depression has been created under Kavarren.

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 Book 42C, page18-20)

## **Impact on the Kavarren Area.**

Jacobs 22 March 2017 Integration Report, page 71.

*“An investigation by Jacobs (2016f) confirmed that drawdown extends to Kawarren area.”*

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### **Impact on the Gellibrand River.**

SKM/Jacobs (18 December 2017) maintain that there is limited impact on the Gellibrand River.

### **Impact on the Campbell’s property at Yan Yan Gurt.**

SKM/Jacobs State the *“This assessment makes the assumption that current conditions at the investigated sites are not materially affected by pumping from the borefield.”* (14-09-2015)

It is also stated in this report that the drawdown under the Campbell’s site is 2-5 metres – inside the area of drawdown influence.



## Unknowns that could be impacting the region.

1. Salinity movement within the earth structures under changing hydrogeological conditions.
2. Downward 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.
7. Reduction in surface and aquifer inflows/outflows to and from Lake Colac.

*(See Otway Water Book 42C for discussion impacts/trust etc.)*

## **Independent Review will be Thorough**

*“The process for remediation planning includes independent technical review and will determine the scope of impact. This will involve a thorough investigation and assessment and must be done with input from the community and an expert reviewer appointed by SRW. This plan will be also be reviewed by SRW’s expert reviewer.”* Grace Mitchell DELWP Ref:

MIN049111, 15-10-2018.

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## **Critical Problems with the SKM/Jacobs Work.**

The majority of the studies from which the data being fed into the 2016-2017 groundwater model, have not followed the most basic processes normally followed when conducting scientific investigations, with:

1. An understanding that rigorous scientific procedure insists that before any analysis of data is attempted the data is registered with an independent body including the name(s) of the researcher and the date data was collected. There is no evidence since 2008, in any of the SKM/Jacobs

studies indicating that this procedure has been followed.

2. Poor literature search excluding key studies.
3. Omission of key variables.
4. Existing problems and or dangers downgraded, excluded or ignored.
5. Existing data unjustifiably excluded.
6. Existing data corrupted.
7. Existing data replaced with assumptions.
8. State Government Policy ignored until 2015, and then,
9. objectives are pursued following the letter of the “law” not the intent of the “law.”
10. Limitations of recommendations and proposals not clearly defined.
11. Making assumptions, drawing conclusions and making predictions from faulty and limited data.
12. Presenting half truths and prevarication.
13. Using limited data gained starting at a 2014 baseline with the exclusion of data collected pre 2014.
14. Reluctance to admit errors.
15. Failure to correct errors.

16. Failure to modify/amend studies with corrections.
17. Failure to recognise contradictory statements.
18. Failure to have studies peer reviewed from outside the Jacobs regime.
19. In other instances failure by Jacobs peer reviewers to adequately scrutinise their work.

## **Reassurance of Thoroughness .**

The conditions in the s78 Notice are important *“...for the protection of the environment and to reassure the community that Barwon Water must address the impact of its groundwater extraction.”* Barwon Water’s response to the s78 Notice.

## Community Involvement.

*“I will ensure the health of our local waterways is prioritised, and that locals are kept well-informed on the development of the*

*remediation plan.”* Direct quote from Hon Lisa Neville, 9 August 2018 Media release.

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The Hon. Lisa Neville states *“There will be community input into the remediation plan that will also ensure the full extent of environmental impact is identified and that they are addressed by the remediation plan.”*

Hon Lisa Neville Ref: ADQ001505, reply to Samantha Dunn, Adjournment Debate Matter, 9-10-18.

*“Barwon Water is undertaking significant consultation with the community and key stakeholders, and has established a community and stakeholder working group to design the remediation plan.”* Managing Director Barwon Water, Tracey Slatter, Barwon Water’s response to s78.

*“... the notice specifies Barwon Water must engage with the local community and other*

*relevant stakeholders in developing its remediation plan.*” Barwon Water’s response to the s78 Notice.

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*“Barwon Water is committed to working closely with the local community...”* Barwon Water’s response to the s78 Notice.

## **Omissions in the 22 June Groundwater Remediation Workshop 3.**

(See B43p26-27)

1. The reports prepared by SKM/Jacobs leading up to the licence renewal and the remediation of Boundary Creek and the Big Swamp have not been validated or peer reviewed.
2. In the notes headed “Next Steps” one of the steps was that the “experts’ would include as part of their working document a broader context and statement of assumptions.
3. Although outside the brief of this working group other impacts within

the area of drawdown influence  
would be outlined.

This working document would be based  
along sound scientific and technical  
principles overcoming any shortcomings  
as outlined in Charley's handout – see Book  
43C pages 40-43.

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## **Potentiometric Level Buffering.**

Baldwin's comments to include for discussion at the 13th November 2018 remediation experts meeting, my suggestions re: potentiometric level buffering climate change.

Email 07-11-2018 from Darren to Jo Lee (BW).

***"1. What has been the impact on the Big Swamp of lowering the hydraulic head of the LTA from metres above the swamp to metres below?"***

***2. What was the pre-groundwater extraction levels of this head in relation to the Big Swamp?"***

***3. Would Boundary Creek have dried up, losing its summer base flows despite climate change, if groundwater extraction had not taken place?"***



## ***“Indicates” & “Most Likely,” Morph into CERTANCIES.***

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***“The model indicates that the operation of the borefield over the past 30 years is most likely responsible for two thirds reduction of base flows into Boundary Creek.” (Jacobs 16 June 2017:Barwon Downs Hydrogeological Studies 2016-2017, Numerical Model-Calibration and Historical Impacts. Barwon Water.)***

**If Something is Repeated often enough it becomes *FACT*.**

The statement above has

1. been based on doubtful input into the model,
2. been repeated numerous times, and
3. has morphed into the following statement being made as *FACT*.

***“A further report commissioned by Barwon Water titled “Barwon Downs Geological Studies 2016-2017: Numerical model calibration and historical impacts”***

*(Jacobs June 2017) found that: operation of the borefield over the past 30 years is responsible for two thirds of the reduction of groundwater base flow into Boundary Creek...”* (Ministerial Notice Section 78 of the Water Act 1989 issued to Barwon Water 11-09-2018.)

## What is to be done?

*“...the environmental impact from past extractions means there needs to be a **change in approach**.”* Media Release from the Hon Lisa Neville, 9 August 2018.

## Prioritise Works.

*“**I will ensure the health of our local waterways is prioritised, and that locals are kept well-informed on the development of the remediation plan.**”* Direct quote from Hon Lisa Neville, 9 August 2018 Media release.

## Response To Maxine’s Petition.

In a response to a petition tabled by Richard Riordan MP, Minister for Water, Lisa Neville, has made it extremely clear that there will be no groundwater extraction until

**ALL REMEDIATION** work dictated under the remediation plan has been completed.

*“**Barwon Water will not extract groundwater, other than for maintenance and emergency response purposes, while the application to renew the groundwater licence is assessed and until all remediation work dictated under the***

*remediation plan has been completed.”* Hon Lisa Neville MP, Ref: PET000438, 30-10-2018.

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## **Barwon Water’s Response.**

*“We will fully co-operate with the Section 78 notice to get the right outcomes.”*

*“Furthermore, we will continue working closely with the local community, key agencies and technical experts in the months and years ahead towards developing and implementing the remediation plan.”*

Coordinator Water resource Planning, Jo Lee email to Malcolm Gardiner, attaching the s78 Notice and Barwon Water’s Response, 14-09-2018.

## **Whose is Responsible?**

*“DELWP, SRW and Barwon Water are all committed to transparency of the process regarding the section 78 notice.”* Hon Lisa Neville, 9/10/2018, Ref: MIN049314.

*“The section 78 notice requires Barwon Water to consult the Corangamite CMA to prepare the scope of works for development of the*

*draft and final recommendation plans.”* Hon Lisa Neville, 9/10/2018, Ref: MIN049314.

## **Intergenerational Considerations.**

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The State Environment Protection Policy (Waters of Victoria) Act No. 8056/1970, s 107, 4 June 2003, states...

*“Principle of Intergenerational Equity.*

*The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.”* Considering it is anticipated that the recovery of the depleted aquifers will take between 25 and 70 years, this becomes an intergenerational issue. Any remediation plan has to take this into consideration.

## **Lifting the s78 Notice.**

The notice will only be lifted when clear triggers have been achieved. *“This and any subsequent notice issued under section 78 of the Water Act for Barwon Water to remediate will set out a process and clear triggers that would lead to*

*the notice being lifted.”* Grace Mitchell DELWP Ref: MIN049111, 15-10-2018.

Until the notice is lifted there is to be no more extraction other than for maintenance of infrastructure and emergency situations. *“The use of notices will also require that Barwon Water does not recommence groundwater extraction, thereby eliminating the risk that impacts are exacerbated by further pumping.”* Grace Mitchell DELWP Ref: MIN049111, 15-10-2018.

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\*  
Email to JoLee (Barwon Water 16/09/2018)  
Charley Workshop 3 Notes.

I request that the following be sent to workshop participants via email:

1. These notes.
2. Nicole's unedited notes.
3. "Requirements After Workshop Two in July 2018"  
Document attached to this email.

4. "ASSUMPTIONS"

"Assumptions for the Remediation of Boundary Creek"  
Document attached to this email.

I also request that the first agenda item for workshop four be to clearly state objectives and requirements that were identified by Nicole and others at workshop three.

My observations which differ Barwon Water notes are:

1. Several community members were impressed by scientists statements that a unique wetland has been severely damaged. It was proposed that the project objective needs to be rehabilitation rather than remediation.

2. There were no objections to this proposal.
3. It was agreed after some discussion that high expectations are appropriate initially.
4. It was agreed that the five scientists (and others when needed) use their extensive experience to report on:
  - 4a what is achievable.
  - 4b how to achieve what can be done.
  - 4c the five scientists agreed to include contingency plans for unexpected events.
5. It was stated that validation of Barwon Water and Jacobs work was inadequate in pH data supplied recently and in Jacobs reports.
6. Barwon Water stated and Jacobs agreed that no validation or peer review of Jacobs work has been done.
7. Lack of trust of Barwon Water and Jacobs by community members was clearly observed and stated by Nicole.
8. Scientists agreed that success in this project fundamentally depends on sufficient recovery of groundwater systems.
9. Consequently it was agreed that
  - a. broader impacts of groundwater extractions in the region are critical to the success of this project and are to be defined by the five scientists.
  - b. an appropriate broader context than was set by Barwon Water is to be defined by the five scientists.
  - c. assumptions and limitations indirectly imposed by Barwon Water would have had catastrophic consequences. As is normal practice in scientific work assumptions and limitations are to be defined by highly



qualified scientists.

d. data gaps work done by Jacobs is missing very large amounts of data. Data gaps work will be extensive and will continue for many months.

10. Other observations were made that reflect on the general nature of the problems being faced.

a. Barwon Water stated that it will use national standards when using the term sustainable groundwater pumping

b. A broad agreement that to plan works is dangerous until

- . data requirements are known
- . risks are specified for options
- . more detailed objectives have been identified

c. We need to see included in project work

- . objectives that were stated
- . validation of data
- . state and federal guidelines

d. Community members are pleased that

- . people with valid criticisms of Barwon Water are included in the project
- . high quality scientists are now included in the project
- . to lock in the benefits of the process being followed by Barwon Water *open consultation* with community members with advanced skills is mandatory.



Assumptions for the Remedia...



Helpful Observations and Re...

These attachments, “*Assumptions*” and “*Helpful Observation*,” were included in the email. The Assumptions attachment included a detailed assessment of Jacobs scientific and technical procedures.