

Ms J Plummer
Chair
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Dear Jo

As Chair of the Community Reference Group appointed by Barwon Water in October 2013, I have pleasure in presenting the report of the committee's deliberations, which have covered 23 official meetings, 6 broader community information sessions and a number of additional meetings.

The members of the CRG thank Barwon Water for the opportunity to take part in such a deep process of engagement – we have not always agreed, but our disagreements have led to better outcomes both for the community and for BW. BW's staff and consultants have been prepared to explore the areas of concern we raised. We appreciate their openness, their professionalism and their friendship over the journey. We also note with pleasure that new spirit of openness and genuine listening with have come through with recent changes at BW.

As a committee, we agreed to be bound by Chatham House rules, ie that the subject matter discussed in the Committee was available to be shared more broadly, in fact as broadly as possible, but that the deliberations within the committee and any matters which were noted as "in confidence" would remain private. This was adhered to, and it was successful in getting further discussion in the community.

We wish to draw the Board's attention to issues which are beyond the licence application but which we believe to be of general benefit. First, in-depth investigation of the potential use of the aquifer for storage and recovery of high surface water flows to augment the natural storage capacity of the aquifer; second, to ensure that Southern Rural Water revise the current permissive consumptive volume for the aquifer to ensure that Barwon Water remains the only licence holder.

We also request that this report be forwarded to SRW at the same time as the proposed licence application so that the views of the CRG be taken into account, and also to demonstrate the extensive nature of community engagement which Barwon Water has undertaken.

We look forward to presenting this material to the Board in the near future.

Sincerely

Jan Greig, Chair CRG.

REPORT OF THE COMMUNITY REFERENCE GROUP ON BARWON WATER'S LICENCE RENEWAL APPLICATION FOR THE GERANGAMETE BOREFIELD – APRIL 2018

SUMMARY

- 1 The CRG supports the renewal of Barwon Water's licence.
- 2 The CRG supports the approach taken by Barwon Water to a 3-phase implementation of any future production pumping at the borefield.
- 3 The CRG believes that all test pumping and production pumping (BW's phases 2 and 3) should be suspended for the period of the proposed licence renewal.
- 4 The CRG recommends that the licence volume for the licence renewal period be restricted to a maximum of 100 ML per year for maintenance purposes only.
- 5 The CRG wishes to ensure that if phase 2 and/or 3 pumping is permitted in the proposed licence period, strong licence conditions as set out in this report be attached to any such pumping.
- 6 The CRG hopes that any such strong conditions would endure beyond any licence renewal, so that, if the implementation of phases 2 and/or 3 were to take more than 15 years, certainty can be ensured without the need for such extensive and costly interventions at subsequent licence renewal intervals.

SECTION 1 – FINDINGS AND RECOMMENDATIONS

1.1 The starting point – the current licence and a story of regulatory failure

The licence under which Barwon Water operates is regarded by the CRG as being a failure in several very important aspects. It has been generally concluded that the licence was based on limited knowledge. The reasons for that inadequacy are relevant to the new licence application and need to be heeded with this application. For example the intergenerational and precautionary principles were ignored and there was no allowance for adaptive management.

In 2002 when the examination of licence conditions took place, little heed was taken of the numerous expert and specialist reports dating back as far as 1984, all indicating there were risks and dangers to granting a licence for groundwater extractions over 1500 ML/year, being the most conservative estimate of recharge in the various reports undertaken to that date.

The compensation flow, for Boundary Creek, provided in the resulting 2004 licence was inadequate. The licence did not explicitly require its effectiveness to be assessed, or provide for remediation if the flow was found to be inadequate. Result: compliance, but serious adverse impacts. Failure of the licence to ensure adequate compensation flows and provide sufficient monitoring and associated remedial measures, is an example of failure of the structure of the licence to allow for adaptive management. In addition, the need for the compensation flow to be provided from the previously independent Colac supply exacerbated the need for augmentation of that supply

The precautionary principle cannot deal with "unknown unknowns", but it may have established markers where further examination was required. The sad story of Big Swamp could not be described as other than a perfect storm, but there were times when intervention could have changed a very bad outcome, eg after the fire, and after the soil disturbance. With the knowledge of the day, these markers should have led to more examination of the potential for an acid sulphate event. The outcome may or may not have changed, but sufficient warnings were in place and community concerns at the time ameliorated to a degree. The failure has been very difficult for the local environment, the community and relations with Barwon Water.

Earlier studies questioned the capacity of the borefield to deliver the licence quantities. The licence quantity extracted, combined with recent extensive metering, monitoring and modelling has revealed serious drawdown across the Lower Tertiary Aquifers. These aquifers have failed to recover and drawdown continues to spread. Again, poor monitoring, not responsive and no adaptive management.

Impacts in adjoining catchments indicate that the area of influence requiring monitoring should have been increased in line with this ever-expanding drawdown area of influence. This area of monitoring must be maintained until the point of negligible impact has been observed.

1.2 Inadequacies in present position

The most recent presentations from Jacobs to the committee in relation to the modelling raised a number of concerns which need to be addressed over the coming period, but which are not blocks to this committee recommending that the licence be renewed. In fact the renewal of the licence is necessary for a number of the issues to be resolved:

Impact on the Gellibrand and tributaries. It is considered that the network of bores monitoring potential impacts on the Gellibrand system is inadequate and should be extended and monitored until drawdown is negligible. Furthermore, the period of monitoring has been too short to allow understanding of the impacts in the long run of pumping on the Kwarren and Gellibrand area. The most recent presentation from Jacobs indicated medium and high impacts on pressure in various stretches. This was reported by local farmers early in this process (Robert Maxwell in particular) and was greeted with some scepticism by external sources. **How these pressure changes translate to surface impacts requires more work and must be a licence condition at renewal. Unsatisfactory impacts (past, present, potential or actual) must be investigated and triggers preventing long term damage included in the licence. Nested bores in the earth structures above the Lower Tertiary Aquifers would provide an early warning system detecting long term risk and should be a licence condition.**

Stem of East Barwon. Similar to the Gellibrand in that the most recent model runs exposed medium and high pressure drops. Similarly, the changes need to be much better understood and this needs to be a licence condition, together with a trigger to prevent long term damage. **A whole of catchment approach is required.**

Boundary Creek. **The problems associated with Boundary Creek have been well recognised as a serious concern: Big Swamp, flow problems in lower reaches, failure of compensation flows, riparian zone problems, stock and domestic requirements of the farming community and community outrage must be addressed.** The CRG members do not want to see this happen in other areas within the drawdown area of influence.

Acid Sulphate Soils. The Inland Acid Sulphate Soils Working Group should be reformed including community representation and reporting. **Knowledge of and understanding the management of potential and actual acid soils due to reduced pressure caused by pumping is necessary within the area of drawdown influence.**

Climate Change. There remains a continued disquiet from the committee members about the long run effects of climate change. **It is recommended that the model underlying the work to date be reviewed and updated at 5 year intervals to account for changes to rainfall, recharge and other significant data such as the buffering capacity of the aquifers as they recover, and be reported and**

explained to the community to ensure that it remains broadly within accepted values for climate variability.

BW Policy Change. Barwon Water's Board has adopted a policy position of not having water restrictions more frequently than 1 year in 20. **The CRG regards this as poor policy in times of climate uncertainty, and believes that the broader urban community would accept more frequent restrictions if climatic or weather conditions required this, given good education.**

The role of aquifer storage and recovery. In the future, these aspects require more comprehensive examination by Barwon Water than has been evident to date. **The CRG encourages Barwon Water to undertake a full examination of this possibility with a view to using the aquifers as an evaporation-free storage as a way to ameliorate the effects of pumping.**

Community engagement. Community participation has been either non-existent or inadequate in the past. The CRG commends Barwon Water for recent reforms, including this committee and the Colac based community meetings. **This engagement must continue beyond the tenure of current Board and executive, and conditions must be in place for this to happen. A licence condition should make specific reference to this requirement.** This committee has gained deep knowledge of the borefield. It would be in the interests of everyone if at least some of the committee members were to continue in some sort of advisory capacity so that this knowledge is not lost, and that ground which has been thoroughly covered does not have to be repeated.

The CRG notes the concern of the wider community expressed in meetings in Colac and the expressed view that all pumping should cease until the aquifers have recovered their pre-pumping levels and that environmental repairs have taken place and proven successful. A broad view was also expressed that no future pumping should take place at all.

The economic costs and benefits of alternative water sources have not been explained adequately to this committee or the community. The environmental impacts of each appear to be particularly badly dealt with, and financial outcomes for Geelong ratepayers have appeared to play the major role in decision making.

1.3 Fundamental principles which the CRG endorses

This committee supports the renewal of the licence, with substantial changes to its conditions.

No pumping for water supply purposes is to be permitted until sustainable recovery is evident.

After each pumping event since the inception of the borefield, the aquifers have not re-filled before pumping has recommenced. The estimate for full recovery with no further pumping has been given to us as 'between 30 and 70 years'. If recharge is so slow, and each significant pumping event effectively lowers the semi-permanent level of the aquifers, this is "mining" the aquifers, and is not sustainable.

The aquifers have been seen as an emergency reserve for urban users in the past – to be used as a last resort to get Geelong through difficult and hard times, regardless of adverse impacts on the rural community and the environment. There is no longer as great a need as Geelong has other alternative sources of water such as the Melbourne-Geelong connection and the desalination plant. The most recent pumping event in 2016 lasted 4 months and took over 3200 ML from the aquifers when no restrictions were in place. This is an example of inappropriate use of the aquifers. It needs to be clearly understood and explained to the community that Geelong's unfettered reliance on this borefield is no longer realistic. This contributes to the deeply held view that **pumping must not be permitted unless Geelong is on stage 3 restrictions.**

The precautionary principle is at the core of good management of this borefield. This has been inadequately heeded in the past, but must be the cornerstone of the future. An example of this approach could include analysis of the impacts of fire on the Big Swamp beyond acidity – for example to examine the potential for heavy metal or other pollution and contamination of either the aquifer or downstream flow. Another example could be whether flowpaths towards areas such as Deans Marsh and Kawarren have been impacted.

No pumping should be allowed from the aquifers, except for maintenance purposes, until it is proven that remediation works in the catchments impacted have been successful. In addition, all long term impacts in the Barwon River and Gellibrand River catchments must be thoroughly understood, with past, present and potential impacts taken into account. This must be communicated with and understood by affected communities. Specific remediation plans must be developed with measurable performance results and implemented as licence conditions.

Independent verification and validation of modelling is essential. Lingering and deep-seated scepticism of the independence of the modellers from Barwon Water is evident in the community. While this committee has some variance in its opinions, SRW is seen as a guardian of standards of independence and the means for independence to be assured. The adequacy of all supporting studies needs to be reviewed and verified, for example, the past and present vegetation studies, to ensure that it is not just the modelling but the inputs to the modelling which receive due attention.

Adaptive management principles must be embedded in the licence such that amendments must be allowed in the period if circumstances require it. One possible example of this is BW's phased approach to testing and use of the aquifer, but it needs to be extended to cover climate change or any deleterious effects of pumping on the environment which may be difficult to identify and/or quantify with current knowledge but which become apparent through monitoring or experience over the licence period.

Community engagement – Barwon Water is to be commended on its recent willingness to involve the broader community in water management policies and in communicating its willingness to be open to community concerns, whilst recognising its primary role is to provide a safe, reliable, affordable water supply within acceptable environmental outcomes. **Continuation of this new attitude must be given emphasis so that it survives any change in the management of BW in the future.** Licence requirements for reporting to the community as well as to SRW are one way to ensure that this happens. It is strongly recommended that specific reporting criteria be adopted for key measures of interest to the community, and that reporting to the community should include routine written material and regular 6 monthly community meetings. It is strongly recommended that the Colac Otway Shire have a representative attend these meetings.

SECTION 2 REACTION TO BARWON WATER'S PROPOSED LICENCE CONDITIONS

BW has indicated a 3 phase program in relation to the operation of a licence renewed from 2019. This is broadly supported by the CRG, but deep concern remains in relation to timing and the capacity of Barwon Water to achieve significant required milestones to progress between phases over a 15 year period.

Phase 1 envisages no pumping, but a continuation of outstanding work to cover both gaps in knowledge and agreed works. This is fundamentally the same as the proposed licence conditions

proposed by the CRG above. Phase 2 envisages a test pumping regime, with the use of the borefield as a water supply system allowed for in Phase 3.

Phase 2:

Specific outcomes must be met for the CRG to be confident that Phase 1 objectives have been met and reported to the community, and SRW must agree that the work is complete and effective before progressing to Phase 2. They are:

That all remediation works on Boundary Creek have been completed, including Big Swamp, monitoring at McDonald's Dam, stock and domestic supply and riparian zone issues, and have been demonstrated to be effective (eg that pH levels at the inlet to McDonalds Dam are not higher than below Big Swamp);

That time lags associated with the perimeter of the drawdown zone are reliable and impacts from past pumping especially on the East Barwon and the Gellibrand and tributaries are fully realised and that no long run damage is either apparent or predicted;

That a clear understanding of where the recharge water to the Lower Tertiary Aquifer is coming from, that the movement between all earth structures above the aquifers is established, and that there is clear understanding of the movement of any salinity, acid and heavy metals through these structures.

That the licence will be cancelled if there are future events with consequences like the Big Swamp acid spill on the Barwon or Gellibrand Rivers or tributaries. The CRG's clear majority view is that if these conditions are met, that movement to Phase 2, test pumping, should be allowed. All effects of previous pumping must be identified and adverse aspects contained and the aquifer is confirmed as stable. The minority view is that no pumping other than maintenance should be allowed for the licence period, in line with the Colac community meeting's express view. It is also the view of the CRG that if no test pumping is to be allowed in this licence renewal period, these conditions must be met in any future licence renewal before test pumping can commence.

It is also the view of the CGR that preconditions to any test pumping should be imposed, in particular:

That the risks and dangers of any test pumping be explained:

That the need for test pumping is clearly explained and that predicted outcomes including the amount of water to be pumped, the drawdown and recovery levels and the time to be taken for recovery, are specified before the event, and metered, monitored and reported after the event;

That the aquifer's resilience is demonstrated by its return after pumping to pumping levels observed before the pumping event with no net loss of pressure. This is most important as it would demonstrate that the aquifer was not being "mined". Past pumping has resulted in at least a semi-permanent decline in aquifer levels after each pumping event, and in no case has the aquifer returned to its pre-event level, resulting in a long term and continual decline;

That if long run damage is potentially an outcome, especially in relation to the Gellibrand or East Barwon systems, that all test pumping ceases.

It is the CRG's view that it is unlikely that Phase 1 and Phase 2 can be completed within the renewed licence period. If it is determined that all requirements of Phase 2 have been met and that Phase 3

can be implemented, it should be borne in mind that community reaction is likely to be very negative in the Upper Barwon and Upper Gellibrand areas.

At its most generous, the committee views BW's proposal as unachievable for production use of the borefield, with any degree of satisfaction being given to the precautionary principle. It is the CRG's advice that Phase 3 should be deferred until the following licence renewal, however if it is to take place, the following licence conditions should apply:

That Schedule 1 be amended such that water must not be pumped unless Geelong is on Stage 3 restrictions;

That annual use cannot exceed 4000 MI, that the maximum use over the licence period must not exceed long run recharge over that period which was estimated to be 24000 MI by the most conservative estimated available rather than the Jacobs figure, but this can be verified over the test period by observed outcomes, and is consistent with the precautionary principle.

That after any pumping event, the return to the aquifer level prior to that pumping event is achieved before the aquifer can be pumped again, ie a steady state is achieved;

That, if at the end of the licence the level of the aquifer has continued to decline, these volumes shall be halved.

As a minimum, the maximum volume over the licence period must be reduced to reflect the intent of BW's stated position.

Overall, the committee is satisfied with BW's stated intent, but the reality of the figures proposed for the licence do not reflect this intent, and there is great unease about the achievability of the proposal as put forward by Barwon Water