



Our ref: CEOW11/15
Enquiries: Leon Brouwer, Ph 9550 4201

Mr Vince Puccio
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Dear Mr Puccio and Mr McDonald

***GROUND WATER CONTAMINATION AND WATER USAGE ASSOCIATED
WITH THE ALCOA WAGERUP REFINERY OPERATIONS***

Thank you for your correspondence dated 15 January 2015 concerning groundwater contamination and water usage associated with the Alcoa Wagerup Refinery operations.

My understanding is that your letter was also received by the Premier, Hon Collin Barnett MLA. You have requested consideration of various matters not directly related to the Department of Water's responsibilities. However, the Premier has advised that the Department of Water will provide a direct response relating to water resources.

The Department of Water has reviewed your questions related to water resources and has provided responses to those in the attachment.

Should you wish to discuss the response, please contact Mr Leon Brouwer, Regional Manager Peel in Department of Water Mandurah office on (08) 9550 4222.

Yours sincerely

Mike Rowe
A/DIRECTOR GENERAL

26 March 2015

Community Alliance for Positive Solutions Answers

Groundwater Contamination (pages 1-3 Q1-10)

Responses to these questions are the remit of the Department of Environment Regulation, except Question 5.

5.1 Has the DoW undertaken downstream water quality testing/analysis of water draining from RSAs? If not, why not?

No. The requirements for water quality testing downstream of RSAs may form part of the conditions imposed on Alcoa's Part V (of the *Environmental Protection Act 1986*) licence, administered by the Department of Environment Regulation. Therefore, Alcoa undertakes this monitoring if required by that Part V licence.

5.2 Has the DoW liaised with the DOH and DER to determine if the downstream water is fit for human consumption? If not, why not?

No, this is not the responsibility of the Department of Water.

Water Usage (pages 3-5 Q1-17)

1. What is the sustainable yield in relevant aquifers in Kwinana, Pinjarra and Wagerup?

Kwinana - Superficial 7.68 gigalitres, Wagerup - Superficial 1.8 gigalitres, Pinjarra - Cattamarra Coal Measures 6.0 gigalitres. These allocation limits are described and set in the Department of Water's published Cockburn Groundwater Area Water Management Plan 2007 and the Murray Groundwater Allocation Plan 2012.

2. How close are the total abstraction rates in each aquifer to the maximum perennial yield?

Based on the published allocation limits and associated water licences issued for each area, Kwinana is 86 per cent allocated, Wagerup 23 per cent allocated, and Pinjarra is 100 per cent allocated. These figures are the licenced entitlements and not their respective usage.

3. How much of the current yield of such aquifers is Alcoa permitted to extract?

Kwinana 63 per cent, Wagerup 10 per cent, Pinjarra 100 per cent (the Cattamarra Coal Aquifer in Pinjarra is a very deep aquifer and is only accessed by Alcoa). In relation to the Cattamarra Coal Aquifer, the sustainable limit is based on known or modelled information, and is not necessarily the total volume of water available. Further abstraction from this aquifer would only be possible upon demonstration of the aquifer's capacity/yield by a prospective proponent, and verified by the Department of Water.

4. What is the trend in level of groundwater quality and quantity in the area?

As superficial aquifers are mainly recharged from rainfall, the trends are in line with the reduced rainfall scenario currently being experienced across the south west of the State. Drawdown from abstraction by all users is also a component and trends vary from site to site. In some instances licensees are required to monitor water quality and results are submitted to the Department of Water on an annual basis. This requirement to monitor water quality is related to certain land uses and water quality varies from site to site.

5. What measures have Department of Water adopted to reflect the effects of climate change on water availability? Will there be a need to revisit water extraction licences in future?

The results of the Department of Water's modelling of climate change scenarios are reflected in the published allocation limits set for each aquifer. Water allocation limits could be revisited in the future but it would be in line with a review of the overall allocation plan and evaluation process, not individual licensees.

6. What is the current total Alcoa Wagerup water usage, including the Willowdale mine site?

Alcoa reported a total water usage for Wagerup, including the Willowdale mine site of 2 916 728 kilolitres in 2014.

7. What is the total number of Alcoa Wagerup licences including Groundwater licences?

Alcoa Wagerup, including the Willowdale mine site, has six current licences (four surface water and two ground water).

8. In 2011 Alcoa applied for permits to construct and operate four production bores. Are these being operated currently?

- Alcoa applied for eight exploratory production bores in 2011 and a construction licence was issued;
- Four bores were to be positioned near the planned Residue Storage Area 9 (RSA9) and four between the railway line and southwest highway east of the Run-Off Water Storage (ROWS) area pond; and
- These bores were not drilled as the water pumped from the depressurising bore field was sufficient for Alcoa's needs.

9. As part of Alcoa's Residue Storage Area 9 Project networks of depressurising bores were installed?

- Yes, the Residue Storage Area 9 depressurising bores are currently in operation;
- the amount of water drawn from this network was 367 589 kilolitres in 2013 and 474 541 kilolitres in 2014;

- this water is stored in ponds for use in the alumina refining circuit;
- the Department has not conducted any studies in relation to the impacts of lowering the ground water table levels associated with Residue Storage Area 9; and
- there are no known impacts to dairy and vegetable farmers. There is little demand for superficial groundwater in the area due to poor quality (salinity).

10. Has the Department of Water been provided with a copy of this report and any copies of drafts of this report?

The Department of Water is not aware of such a report and has not received a copy; however this information may be available from the Department of Environment Regulation.

11. Community Alliance for Positive Solutions requests access to this preliminary report in 3 months and including third-party critical reviews from Department of Water and Department of Health.

See response to question 10.

12. Is the Department of Water liaising with the Department of Environment Regulation contaminated sites branch or the Contaminated Sites Committee established under section 33 of the *Contaminated Sites Act* regarding any of the site contamination issues?

Contaminated sites do not fall under the jurisdiction of the Department of Water and therefore we have no input into this matter. The Department has not previously been consulted by the Department of Environment Regulation on this issue.

13. Projected impacts of climate change and Alcoa's current and projected use of water:

- the demand for commercial use of groundwater and surface water is managed by the Department of Water through the licence application and assessment process. This occurs on a first in first served basis without any preference to one use over another. Domestic use of groundwater and surface water is not subject to licensing management except for groundwater sourced from a confined aquifer. All land owners have the right to source confined aquifer groundwater if it is present and they are not connected to a water supply scheme; and
- the Department is not involved with the commercial purchase of water by Alcoa from Harvey Water.

14. What is the total water allocation quota for Alcoa, farmers/landowners.

Alcoa has groundwater licences totalling 696 000 kilolitres per year and there is 847 200 kilolitres per year allocated to other landowners. 5.26 gegalitres is still available for allocation.

15. Between Alcoa and farmers, who has precedence in water rights during drought seasons?

In December 2010 a Water Resource Compliance and Enforcement Dry Season Action Plan was developed after unprecedented low rainfall across the south west of the State. Compliance and enforcement was increased to deal with any instances of overuse. The Department of Water has developed a set of escalating actions to deal with dry seasons and drought but this does not prioritise water to any users over others. However the Department of Water would engage with the water service providers to determine any exceptional circumstances relating to public water supplies.

Clause 24 of the *Rights in Water and Irrigation Act 1914* provides the Department of Water the power to vary any restriction on a licence if there is a detrimental effect on another person or to protect the water resource and associated environment.

There are no costs associated with either applying for or holding a groundwater or surface water licence.

16. What are Department of Water and Alcoa's contingency plans for extreme weather occurrences?

There are no contingency plans in the Alcoa water licences. If the area was experiencing drought conditions, Alcoa would have the option of purchasing water from a water service provider, trading water from existing water licensees, or investigate alternative supply options such as on site or local drainage water capture or wastewater reuse.

Conversely, if flood events were to occur in the area, overtopping of the Residue Disposal Areas would primarily be a Department of Environment Regulation issue (potential for contamination or pollution), if it were to become an issue at all. It is highly unlikely flooding would ever be so severe as to cause the Residue Storage Areas to overtop and if there were to be an extreme flood there would likely be very significant and widespread issues across the region.

17. What evidence do the Department of Water have to support Alcoa's claims that the depressurising bore field will not have long term impacts.

Given the relatively small volumes of water involved, the size of the Alcoa property and the hydrogeology of the area it was estimated through hydrogeological studies that the cone of depression would not spread outside the Alcoa property boundary.

Questions 18 and 19

These questions are best answered by the Department of Environment Regulation.

Recycled Water (page 5 Q1-4)

1. What is the amount of in-house recycled water used by Alcoa, as a percentage of the total amount of water used by all three of Alcoa's refineries combined?

The Department of Water does not manage in-house recycled water unless it is part of a Managed Aquifer Recharge scheme. A managed Aquifer Recharge scheme is where acceptable quality water is harvested and injected into the groundwater aquifer and subsequently extracted for use. Alcoa does not have a Managed Aquifer Recharge scheme in place, but it is understood that Alcoa recycles a significant amount of their process water on-site.

2. What percentage of water used at each of these refineries (Kwinana, Pinjarra, Wagerup), is recycled water?

The Department of Water does not have information on the volumes of in-house recycled water use at the three refineries. The Department does understand that there is some infiltration of treated wastewater into the superficial aquifer, which replenishes groundwater and subsequently the production bores at Kwinana, from a nearby Wastewater Treatment plant. These quantities are captured in the overall abstraction figures and are included in the licensed groundwater annual water entitlements and is not considered a direct recycling or managed aquifer recharge project as such.

3. Why does Alcoa not use recycled water from other sources such as Perth, Mandurah or Bunbury for its industrial purposes, rather than scarce and precious resource (fresh water)?

The Department of Water is not aware of immediate plans by Alcoa to develop alternative water sources. The Community Consultative Network established by Alcoa may be appropriate forum to direct this question.

4. Could Alcoa/industry build a desalination plant to provide water for processing from Wellington Dam or the Indian Ocean?

Refer to response for question 3 above.