

## **Broke Groundwater Monitoring and Review Protocol – 2010 Flow Testing Program**

The proposed monitoring and review protocol for the upcoming gas flow testing program is similar to the protocol adopted for the pumping test in October 2009. The following steps are proposed:

1) PB will maintain dataloggers at the 7 monitoring bores at the BM01 site (4) and BM03 site (3) (plus one barologger) until the end of 2010. Dataloggers will be downloaded quarterly leading up to (and following) the flow testing program and monthly during the flow testing program. AGL will install a datalogger/s near the pump in each of gas wells HB01 and HB02 prior to the commencement of flow testing and determine if instantaneous pressure/water level data is able to be downloaded at each of the wellheads.

2) PB will compile and QA the data set from each monitoring bore (and gas wells if able to be accessed) and add it to the historical data set. If any unusual water level trends (declines of more than 0.5m in any month in any monitoring bore), PB will advise AGL and the Peer Reviewer immediately and undertake a check of site operational issues. Loggers will be checked within 5 working days to determine if the water level trend is real and ongoing.

3) In the unlikely event that the trend is real and ongoing then PB will advise AGL and provide the Peer Reviewer with the available data and PB's assessment of the event. PB, AGL and the Peer Reviewer will meet within 10 working days to discuss/interpret/resolve trends and to determine an appropriate action plan. The Chair of the BCCC will be advised of the proposed action plan and (depending on the severity of the incident) action may occur between BCCC meetings – actions could be quite varied and may include:

- Continuing water pumping to ascertain the extent of the issue,
- Curtailing water pumping.

Information on the issue, trends and actions agreed by PB, AGL and the Peer Reviewer would be tabled at the next BCCC.

4) Prior to the start of the flow testing, PB will install a salinity logger in the discharge line to the water disposal tanks at each of the sites.

Salinity trends will be monitored monthly and discussed within AGL, PB and the peer reviewer. In the unlikely event of something out of the ordinary is observed (such as salinity level declines of more than 250 EC per month), the parties will meet to discuss/interpret/resolve trends and to determine an appropriate action plan.

5) Members of the BCCC and the peer reviewer will be invited to site to see the flow testing program at a convenient time.

6) AGL, as part of their gas reservoir modelling, can predict the behaviour of water and gas flows over a large area. The model will assist in answering some questions relating to the hydrogeology of the coal seam and gas/water interactions. Additional groundwater modelling is not considered necessary at this time. This information will be shared with PB, the peer reviewer and the BCCC after the completion of the flow testing program.

7) In the final report, a comparison will be made between the pre and post flow test condition of the gas reservoir and overlying aquifers (both water levels and water quality).

NOTE - This monitoring and review protocol has been reviewed and is acceptable to the Peer Reviewer, Professor Garry Willgoose.