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AGL Camden Gas Project Groundwater Monitoring Fact Sheet

Camden Gas Project.

AGL's Camden gas Project currently produces 6% of NSW's gas supply, consisting of 130 gas wells, low-pressure underground gas gathering lines and the Rosalind Park gas Plant. The project has been producing gas for the Sydney region since 2001, and understands that potential impacts on water catchments and groundwater resources are of concern to local communities.

Camden groundwater resources.

As a part of the sustainable development of coal seam gas exploration it is critical to protect groundwater resources. The Camden groundwater investigation and monitoring program was developed by Parsons Brinckerhoff (PB) and AGL to help the community understand what impacts, if any, there might be on groundwater resources as a result of exploration for natural gas.

A desktop study has been completed for the Camden North area that identifies the different groundwater systems across the region. These are shown on the Geological model on the following page, and consist of:

- › Alluvial aquifer system
- › Hawkesbury Sandstone aquifer system
- › Narrabeen Group Sandstone aquifer system
- › Illawarra coal measures

There are no alluvial aquifers within the northern expansion area but there are areas of alluvium located to the south near the Nepean River. Minor groundwater is sometimes located in the shallow Wianamatta Group shales however yields to bores are low and water quality is generally brackish to salty (and hence it is not considered a useful aquifer). It also occasionally supplies seepage flows to hillside springs, gullies and creeks.

The three primary aquifer systems (the sandstone aquifers and the coal measures) are separated by low permeability claystone aquitards¹. Available water quality data suggests distinct differences in water chemistry and isolation of each of these aquifer zones. The Illawarra Coal Measures have higher fracture related permeability (compared to surrounding rocks) and are sometimes termed *coal seam aquifers*, although they are in fact mostly low



▲ Angus from Parsons Brinckerhoff collecting groundwater information.

About us

AGL has been operating in Australia for over 170 years and was one of its first listed companies.

AGL is Australia's leading renewable energy company and is Australia's largest private owner, operator and developer of renewable generation assets. AGL also operates retail, merchant energy and upstream gas businesses and has over three million customer accounts.

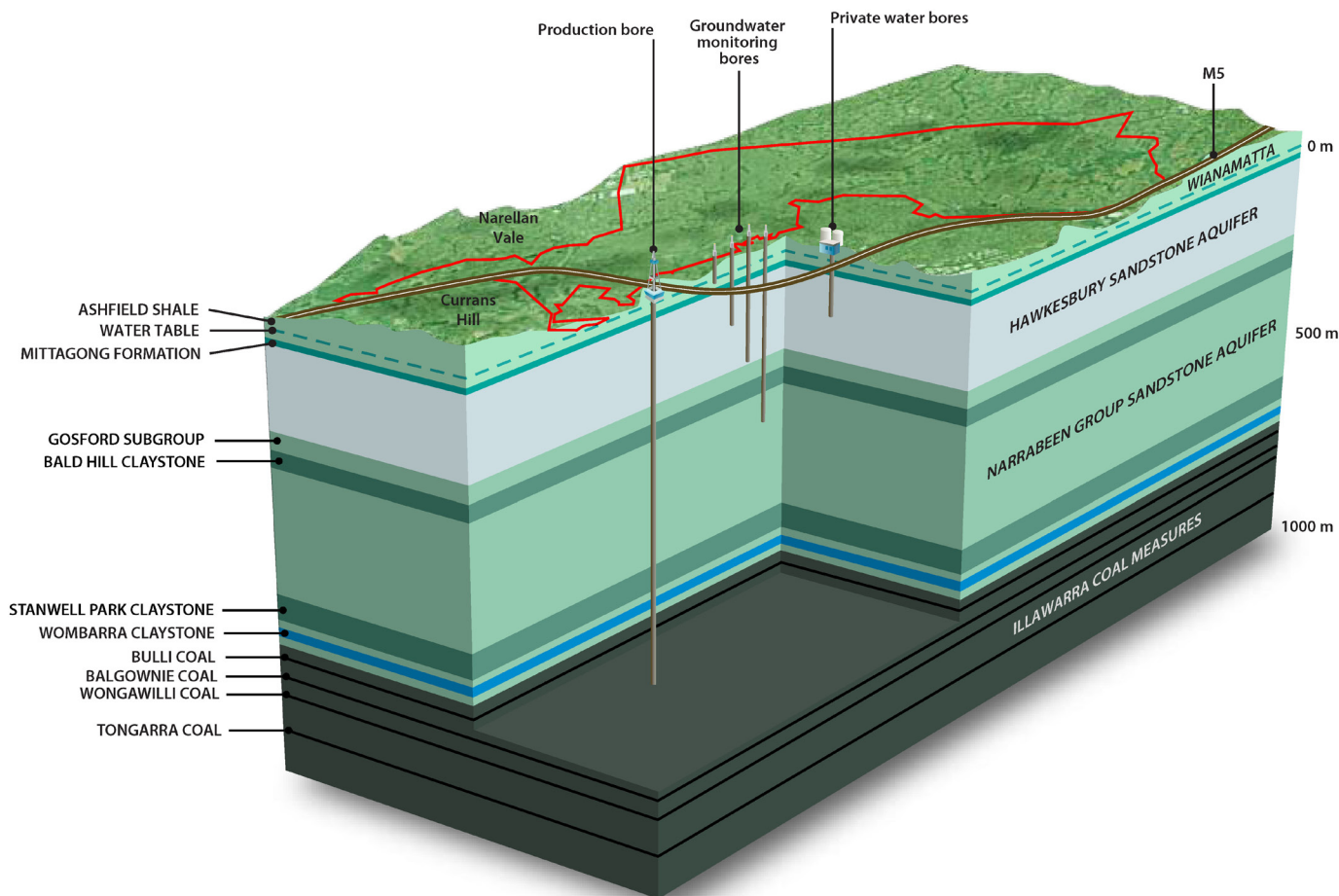
AGL is taking action towards creating a sustainable energy future for our investors, communities and customers.

permeability water bearing zones and not useful aquifers for supply purposes. Yields are typically less than 0.05 litres per second and water quality is mostly slightly to moderately salty (salinity EC are typically 5,000 to 15,000 $\mu\text{S}/\text{cm}$). These zones are also too deep to be considered for any beneficial or consumptive uses.

Camden groundwater program.

Water quality monitoring program is under way of gas wells within the Camden Gas Project. This will be extended to the Camden North area. Installation of dedicated monitoring bores is proposed across the area to establish baseline conditions in the northern area to observe any changes in the southern areas. Monitoring of both water levels and water quality is proposed.

Geological model of Camden North, NSW.



¹ Permeability is a measure of the degree of connection of open spaces in the rock and how fast water moves through these void spaces. Aquitard is defined as a low permeability unit that can store water and release it very slowly. These rock layers retard flow between adjacent rocks or aquifers.

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