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AGL Gloucester Gas Project. Groundwater Investigations Fact Sheet

AGL acknowledges that both surface and groundwater resource protection is a key issue for the Gloucester community. AGL believes it is critical to protect water resources as part of the sustainable development of coal seam gas.

Groundwater investigation studies.

Groundwater investigations for the Gloucester Gas Project are well advanced. The investigation studies comprise the following phases:

Phase 1 (completed): A desktop study that reviews existing information to develop an initial understanding of the hydrogeological characteristics of the area.

Phase 2 (completed): Detailed groundwater investigations that use existing and new water bores to measure levels, quality, age and characteristics of the water in the aquifers, analysis of the information collected and establishment of an extensive monitoring network. Results include identification of the different groundwater systems and development of a conceptual flow model that describes recharge, discharge and flow.

Phase 3 (commenced): Numerical model is developed to represent the different groundwater systems so as to predict their behaviour under different natural and project development scenarios.

Phase 4 (ongoing): Monitoring program initiated in January 2011 that includes long-term monitoring and compliance reporting.

Phase 5 (commenced): Project updates are performed including further site investigations and additions to the monitoring network as required.

The Phase 2 studies have been investigating groundwater and surface water conditions within the Stage 1 Gas Field Development Area (GFDA) since December 2010. The studies involved geological appraisals, drilling, permeability testing, water level monitoring, water quality sampling, isotope studies, data collation, analysis and reporting. In addition the study was designed to help the community better understand the groundwater in the project area and what effects, if any, there might be on the groundwater from natural gas exploration. This study (and the earlier Phase 1 desktop study) is being independently peer reviewed to confirm the veracity of the studies and the conclusions.

In addition to the comprehensive groundwater studies that will be completed for the Stage 1 development, AGL is committed to completing similar comprehensive groundwater studies for future development beyond the Stage 1 area.



▲ Irrigator in Gloucester.

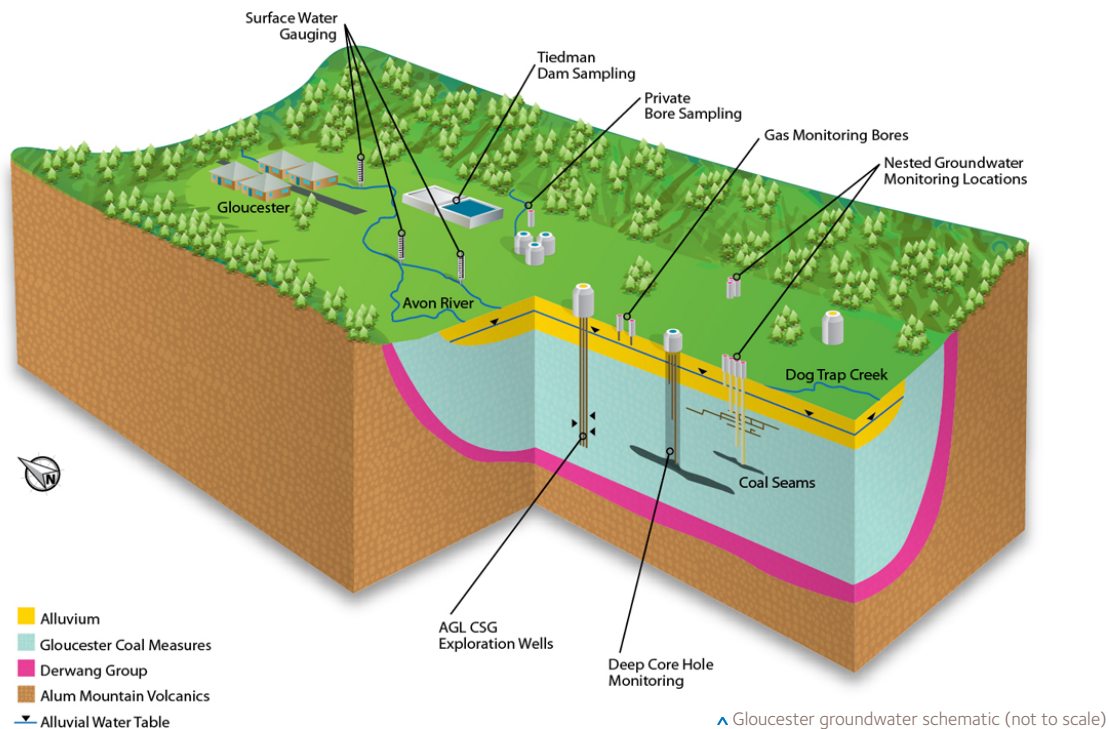
About us

Formed in 1837, AGL Energy Ltd is Australia's largest renewable energy company, selling gas, electricity and energy related services to more than 3.4 million customers across NSW, SA, VIC, and QLD.

AGL is committed to creating a sustainable energy future for our customers, investors and communities. The company is Australia's largest private owner, operator and developer of renewable generation assets. AGL is expanding its gas exploration and production to facilitate long term supplies for its domestic customers.

For more Information

If you would like to know about how we are meeting and exceeding our regulatory requirements, our groundwater studies or anything else about our operations in Gloucester please contact the Gloucester Gas Project team.



Groundwater and surface water investigations network.

The groundwater investigations network (as at November 2011) includes:

- > 22 groundwater monitoring bores installed with dataloggers to record water levels
- > Three stream gauges installed with dataloggers to record salinity and water levels (surface water)
- > Two shallow gas monitoring bores
- > Two seepage monitoring bores to assess potential seepage from the Tiedman produced water dams.

Additional monitoring bores are being installed in 2012 in areas associated with new exploration programs (Waukivory) and irrigation trials (Tiedmans).

Confirmation of different groundwater systems.

The studies to date have confirmed four types of groundwater systems across the area. These include the alluvial aquifers (the 'top layer') to about 12m depth, the shallow rock aquifers below the topsoil to a maximum depth of 150m; confining units (which are compacted, low permeability layers of varying sediment types including sandstone, siltstone etc) which extend from 150 to 1000m depth and surround the coal seams; and coal seam water bearing zones that generally extend from 200 to 1000m depth) and sit within the confining units.

Water resources.

The studies show that there are few beneficial aquifers (fit for stock, irrigation or domestic use). The water in the shallow aquifers in the alluvium and shallow rock is saline and low yield, and is only suitable for stock water supply and limited domestic purposes. Deeper water bearing zones have no groundwater resource potential.

Knowledge of recharge, discharge and flow processes.

Data collected from the monitoring network provides a greater appreciation of groundwater recharge, discharge and flow processes through the different groundwater systems of the Gloucester Basin, and its interaction with the Avon River surface water resource. The studies have confirmed that in the Avon River catchment:

- > most rainfall contributes to surface runoff
- > rock permeabilities are low and recharge does not occur everywhere in the landscape
- > recharge to the rock aquifers is low
- > all groundwater in all systems comes from rainfall
- > water levels in the rock aquifers do not respond to flooding rains
- > all groundwater in the rock aquifers is old and has a long residence time.

Most importantly, this investigation has shown that there is no evidence of natural connectivity between shallow and deep groundwater systems.

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