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Fact Sheet: Gloucester irrigation program.

AGL Gloucester Gas Project
May 2014

Produced water is water that has been removed from the coal seam to allow the gas to flow. It is thousands of years old and brackish – which means it has more salinity than fresh water, but not as much as seawater. For the first time in NSW, produced water is being blended with fresh water and used to irrigate crops at AGL's Tiedmans Property at Gloucester.

Beneficial re-use of produced water.

Produced water is slightly salty (brackish) groundwater drawn from the coal seams. The irrigation program at AGL's Tiedmans Property blends produced water with fresh water to irrigate salt tolerant crops. The program blends up to 70ML of produced water with fresh water and applies this to the 12 hectare irrigation plot area using a linear move irrigator with overhead sprinklers.

The program involves growing lucerne (perennial plant) and triticale/forage sorghum (annual crops) on the 12 hectare plot. The crops are harvested and used for silage. A second irrigation plot area (four hectares) has been planted with rye, chicory and clover sown into kikuyu pasture and used for grazing.

The main irrigation area at Tiedmans is divided into 16 plots with four different soil improvement treatments. The soils have been improved with the addition of compost, lime, gypsum and zeolite.

The top four things you need to know:

- 1** The first of three six-monthly scientific reports on the program shows **no elevated readings of salt resulting from our activities.**
- 2** "There was **no salinity impact on soils...** and consequently the effect of this blended water quality on the receiving soils is considered to be negligible." – *Soil quality monitoring and management report (August 2013).*
- 3** "...There is **no change in natural surface water or groundwater quality,** or water levels as a result of the current irrigation trial activities." – *Water Compliance report (August 2013).*
- 4** The latest soil and water monitoring reports arrive at similar conclusions.

Managing produced water.



Water from coal seams is first blended with fresh water to reduce salt concentration before being used for irrigation. The produced water is blended with fresh water to a targeted salinity of 1500 EC* which is approximately equivalent to 1200 mg/L of total dissolved salts (TDS).

By comparison, seawater is about 55000 EC, most irrigation waters are less than 1000 EC (although levels up to 3000 EC can be used on some crops), and drinking water is typically less than 500 EC.

Produced water from AGL's exploration program is held in fully lined storage ponds located on the Tiedmans Property.

Irrigation applications are controlled by moisture meters located throughout the irrigation area. Blended water is only irrigated when there is a soil moisture deficiency and there is capacity in the soil profile to store water and to actively grow crops that transpire the water.

Catch dams have been installed to recycle run-off from the irrigated areas after high rainfall. This system contains and pumps the first 25mm of rainfall, which normally contains the highest sediment and salt load, back to our produced water dams.

* EC (electrical conductivity) is a direct measurement of the salinity of water.

Did you know?

- > AGL recognises that the protection of both surface water and groundwater is very important to the Gloucester community. AGL is constantly monitoring and reviewing data from its local water bores and has provided funding to the Gloucester Shire Council to employ an independent water scientist to deliver detailed water studies on the Gloucester Basin.
- > Natural gas can be safely developed with minimal environmental disruption. The target coal seams are located hundreds of metres below the surface, and separated from the beneficial water zone and water table by hundreds of metres and layers of solid rock.



Groundwater, surface water and soil monitoring at the Tiedmans Property.

The irrigation program is subject to continuous monitoring. Baseline soil and water studies were completed before it commenced in April 2013 and research will continue for the life of the irrigation program.

A soil and water monitoring network has been established across the irrigation area to evaluate the impact of blended water irrigation on soil and adjacent water sources. The baseline studies and six monthly reports are available on the Gloucester Gas Project website, agl.com.au/gloucester and future reports will continue to be made available to the community via the website.

For more information.

- > Call our Project Information Line on **1300 886 170**.
- > Visit agl.com.au/gloucester.
- > Join AGL's online community YourSayAGL.com.au.
- > Follow us on **Twitter @YourSayAGL**.



Harvesting crops at AGL's Tiedmans property.

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