

NORTHERN WATER

GREAT ARTESIAN BASIN REDUCED ABSTRACTION STUDY: MODEL SCENARIOS

BACKGROUND

Infrastructure SA (ISA) engaged the Goyder Institute to prepare a report which investigates the effect of reduced groundwater abstraction from the Great Artesian Basin (GAB). Particularly to understand if a reduction in groundwater taken from the aquifers of the GAB would impact well pressure and subsequent spring pressure levels, and associated flow rates.

A groundwater flow model developed by the SA Department for Environment and Water (DEW) for the southwest region of the GAB (Far North model) was used to simulate six groundwater abstraction scenarios and subsequently assess aquifer (hydraulic head or pressure) and spring discharge response.

MODELLED SCENARIOS

Six abstraction scenarios were developed by the Project Advisory Committee, with representatives from Northern Water, the Goyder Institute, BHP, and DEW. The scenarios focussed on reduced abstraction from Wellfields A and B in the Far North of South Australia. The scenarios are presented in Table 1.

Table 1. Scenarios for Far North model.

Scenario No.	Wellfield A (% of abstraction)	Wellfield B (% of abstraction)	Description
1	100%	100%	No Change
2	50%	100%	50% reduction in abstraction from Wellfield A. No Change in abstraction from Wellfield B.
3	0%	100%	100% reduction in abstraction from Wellfield A. No Change in abstraction from Wellfield B.
4	50%	50%	50% reduction in abstraction from both Wellfields.
5	100%	0%	No change in abstraction from Wellfield A. 100% reduction in abstraction from Wellfield B.
6	0%	0%	Cease abstraction from Wellfield A and B.

Each scenario began at the start of 2020, where abstraction rates taken from 2022 to 2028 were linked to abstractions acquired from published forecasts and were provided as percentages of total abstraction. As changes in current abstraction rates are not anticipated to occur until 2028, each modelled scenario ran to 2128 in order to predict abstraction rates over 100 years.

It is important to stress that these scenarios are purely experimental and do not represent any proposed future reductions in abstraction from the GAB. They are merely adopted to examine potential response in aquifer pressure and spring flow rates as predicted by DEW's Far North model.

Next Steps

Results of the study are being finalised, and the report will be made publicly available on the Northern Water website once complete.