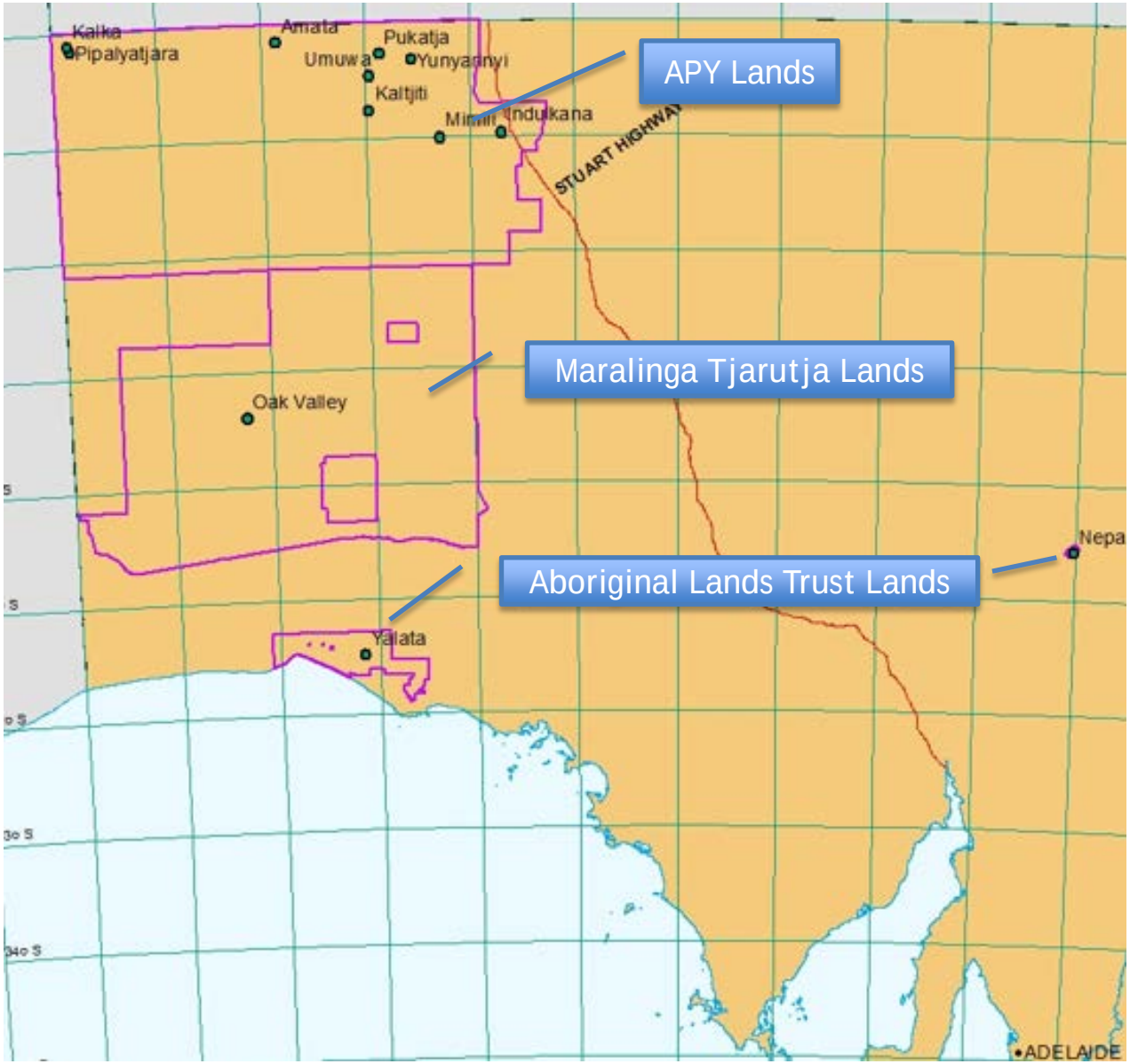
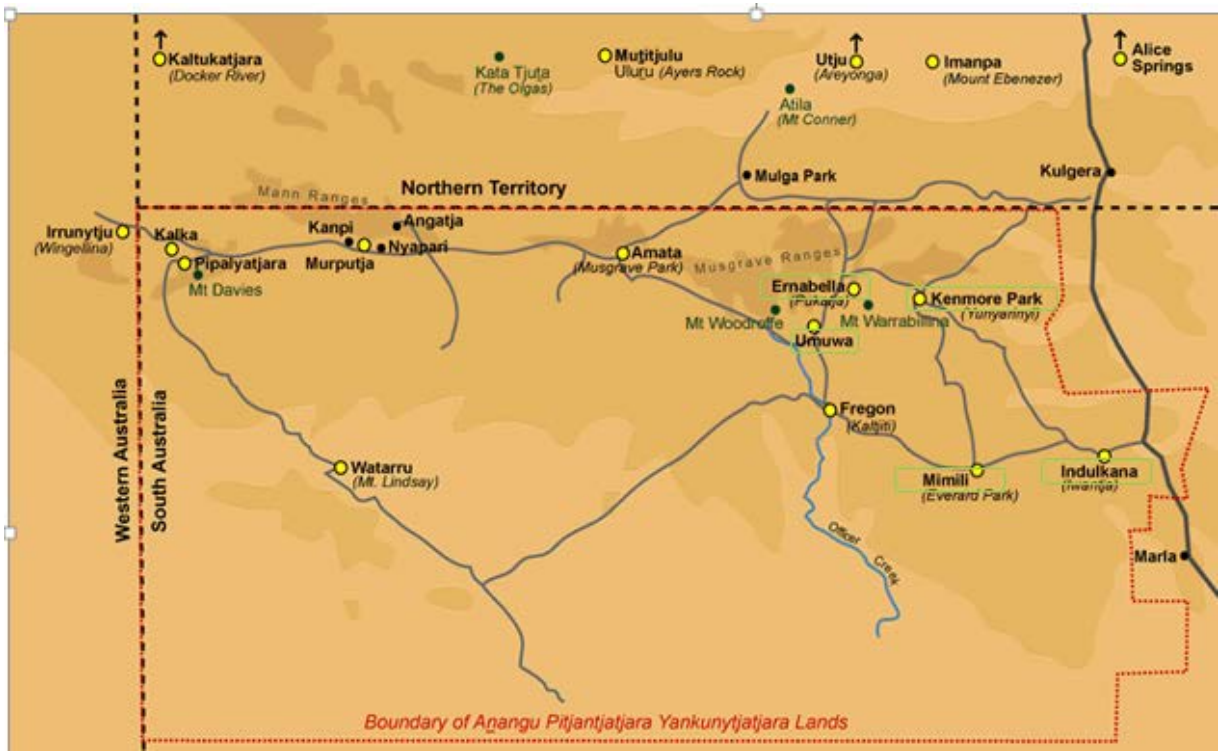
Water supplies for Aboriginal communities

Government of South Australia
Department of Environment,
Water and Natural Resources

Location of Aboriginal Communities SA



Anangu Pitjantjatjara Yankunytjatjara Lands



Aboriginal Local Gov Area population 2500

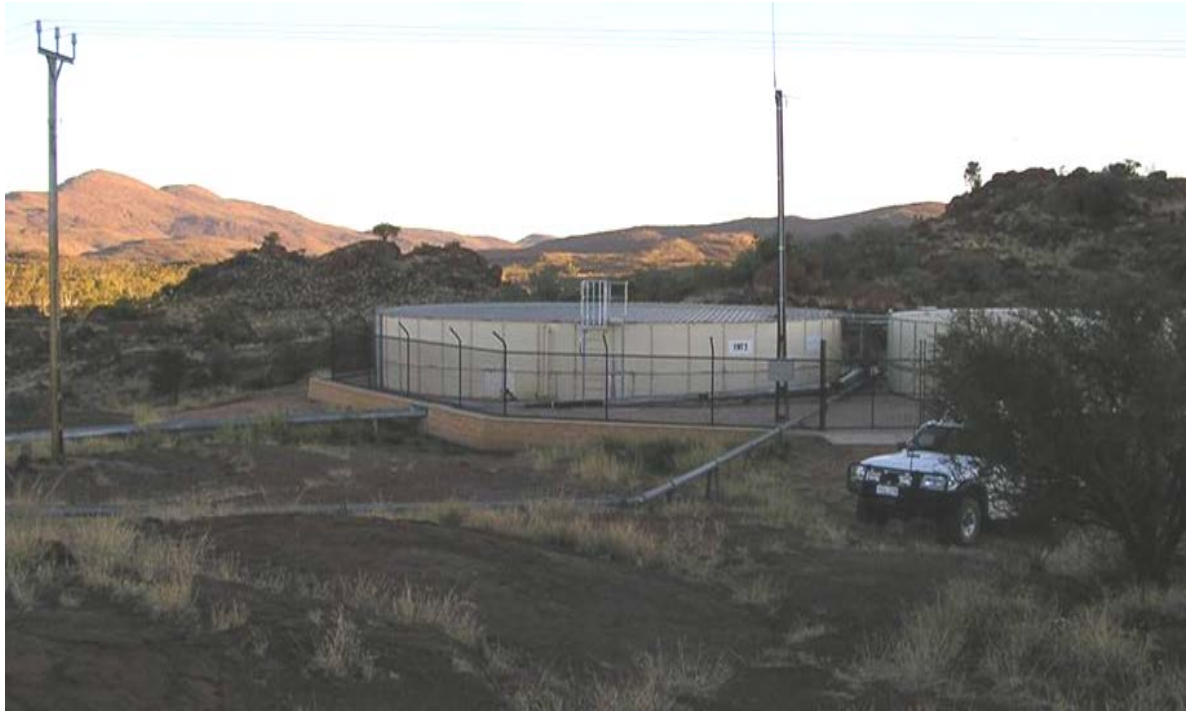
State Gov. Involvement in water supply

- DEWNR (and former agencies) has been involved with water supply since ~1956
- Several major drilling programs from 1970s
- SA Water is water supply operator supplying ~485 Megalitres/year to nine communities

SCADA installed ~2008

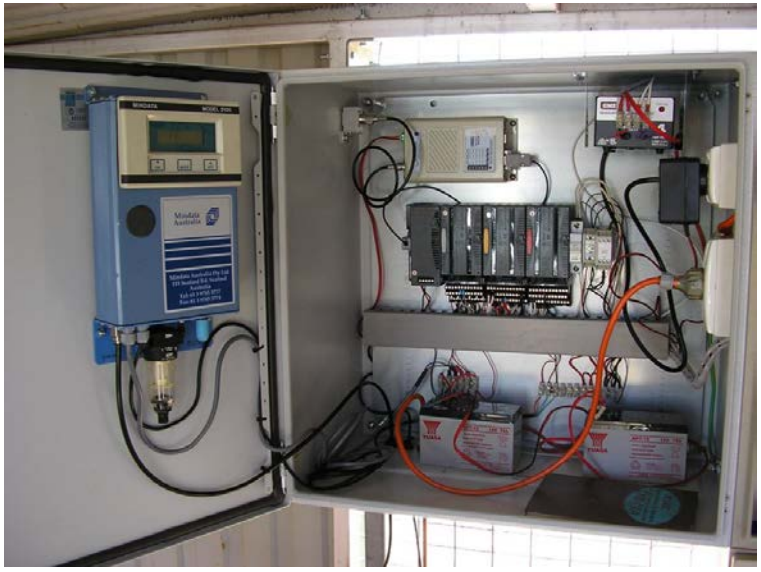
Allows remote control of:

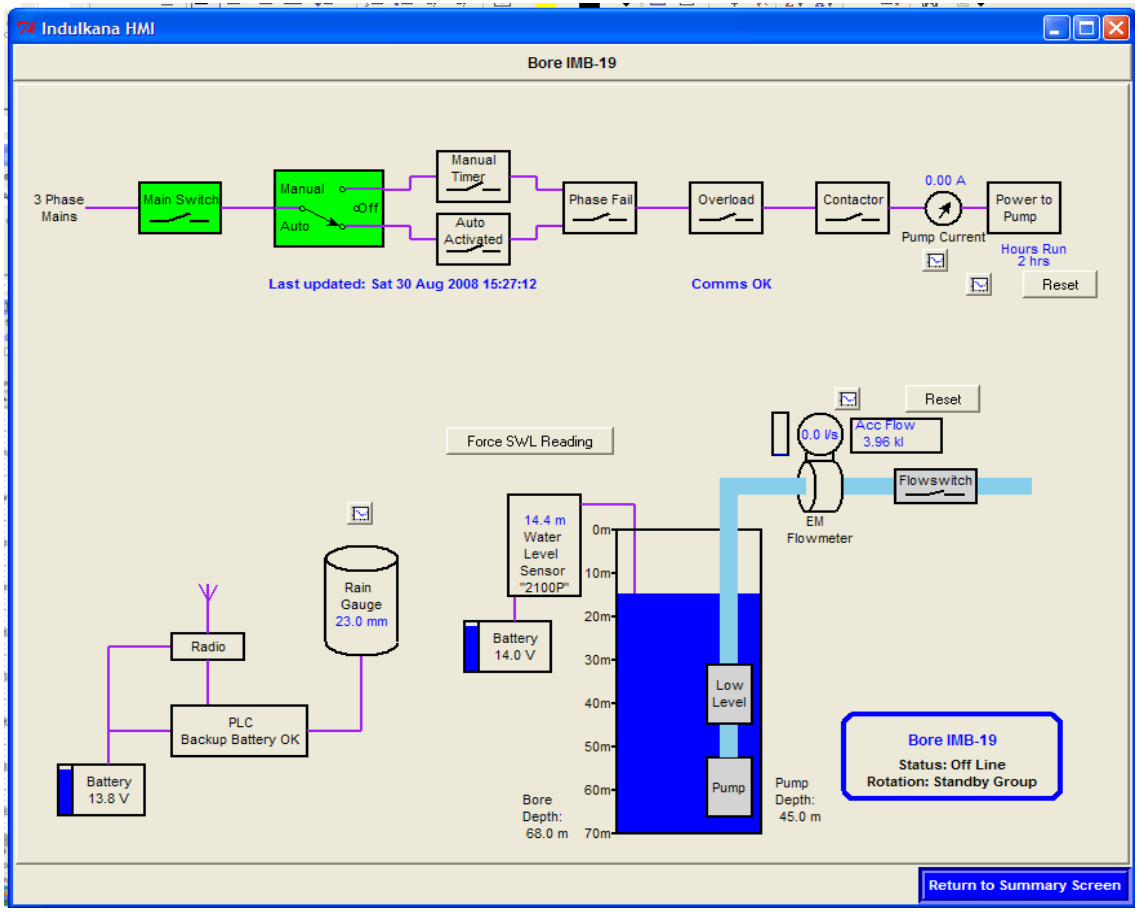
- Wells
- Storage tanks
- UV sterilisation plant
- Effluent plant



Production wells

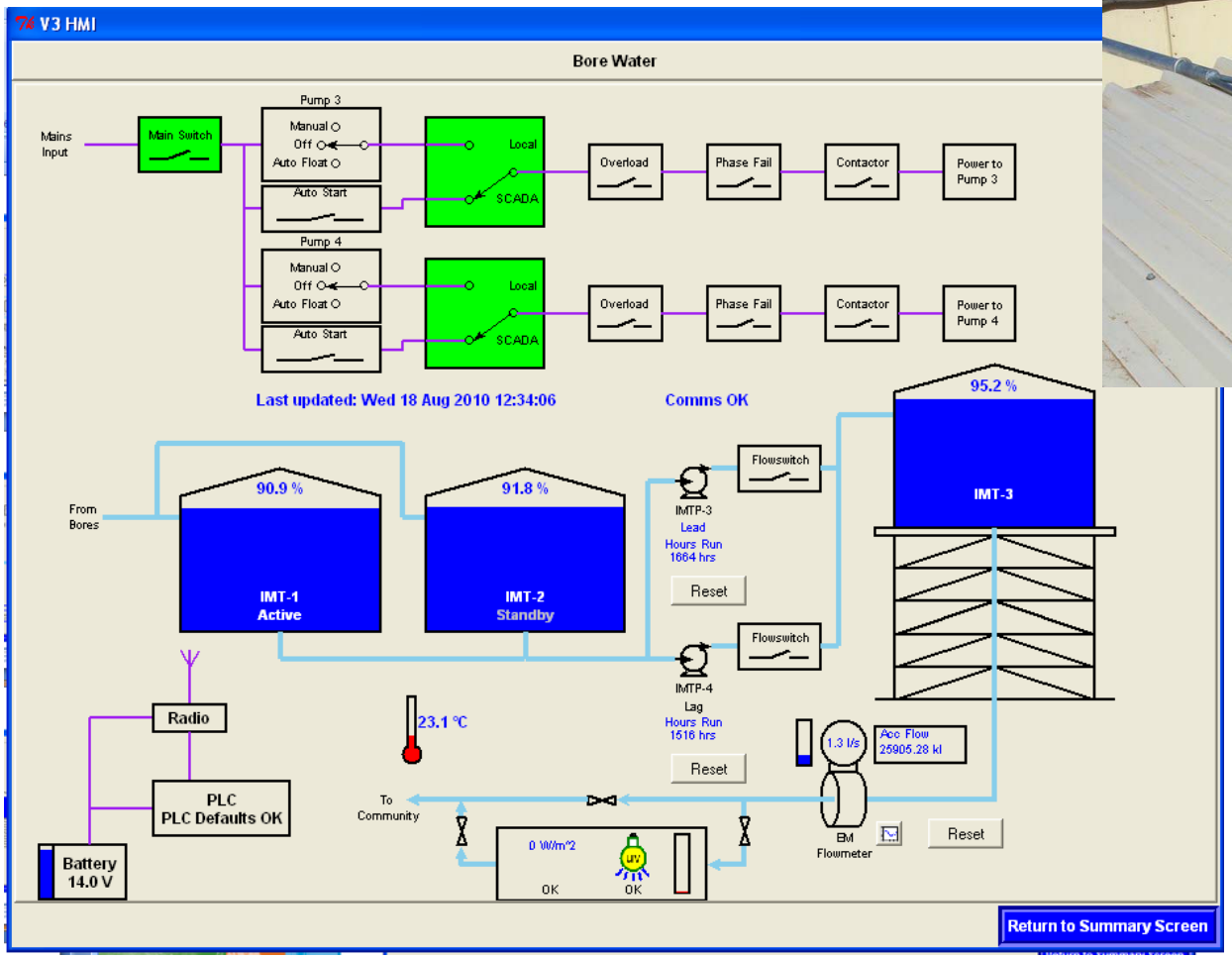
- Automatic pump control
- Rotation of pumping wells
- Logging water level & flow
- Internet control
- Graphing basic data
- Mobile phone alerts





Water storage tanks

- Water levels monitored with ultrasonic sensors

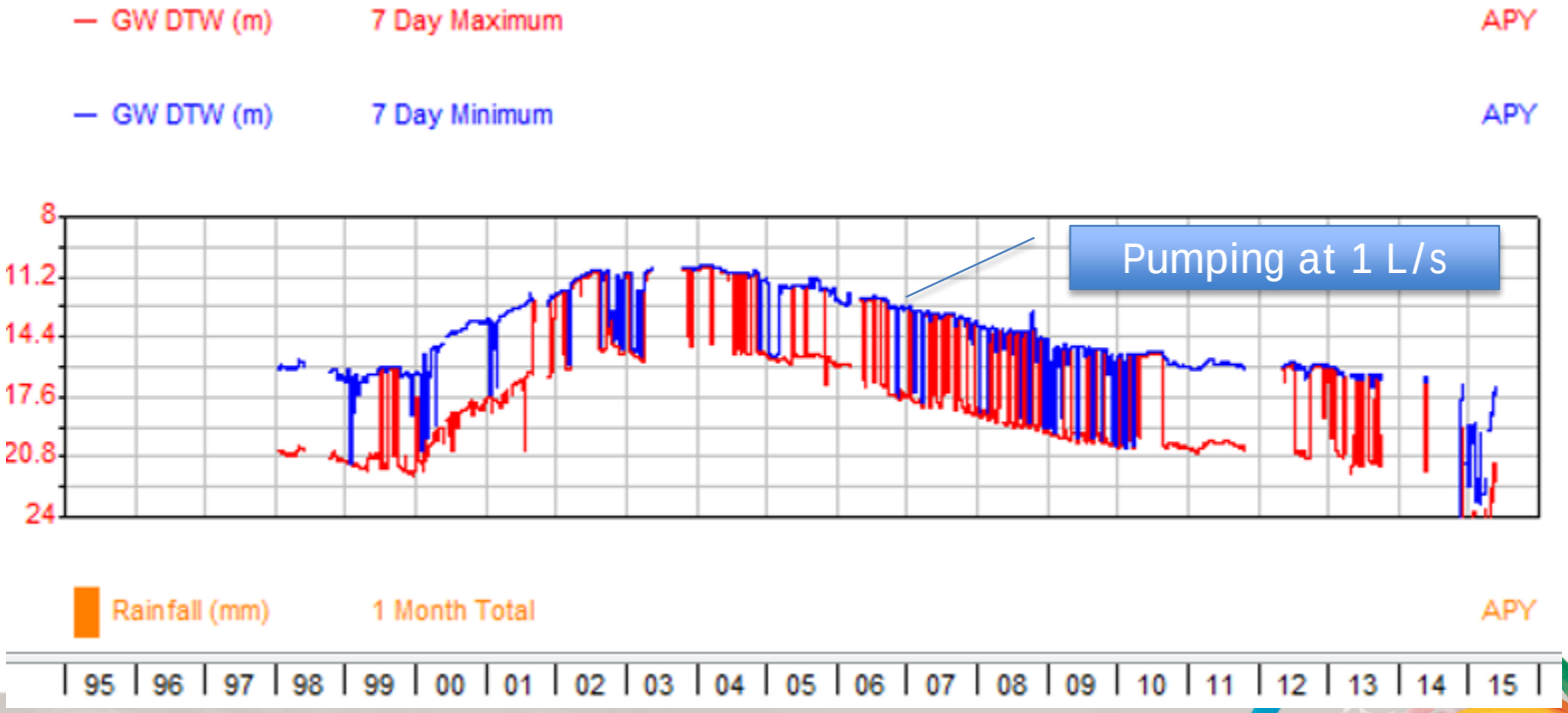


The 5-year sustainability review

- SA Water requires a 5-year review of groundwater resources and sustainability
- Report determines:
  - Well Life based on the how long it can be pumped before it is considered to have 'run out of water'
  - Risk of catastrophic well failure due to casing collapse
  - Requirements for new or replacement wells
- Infrastructure age is of great concern as 25 of the current 48 wells are >25 years old and many are steel cased

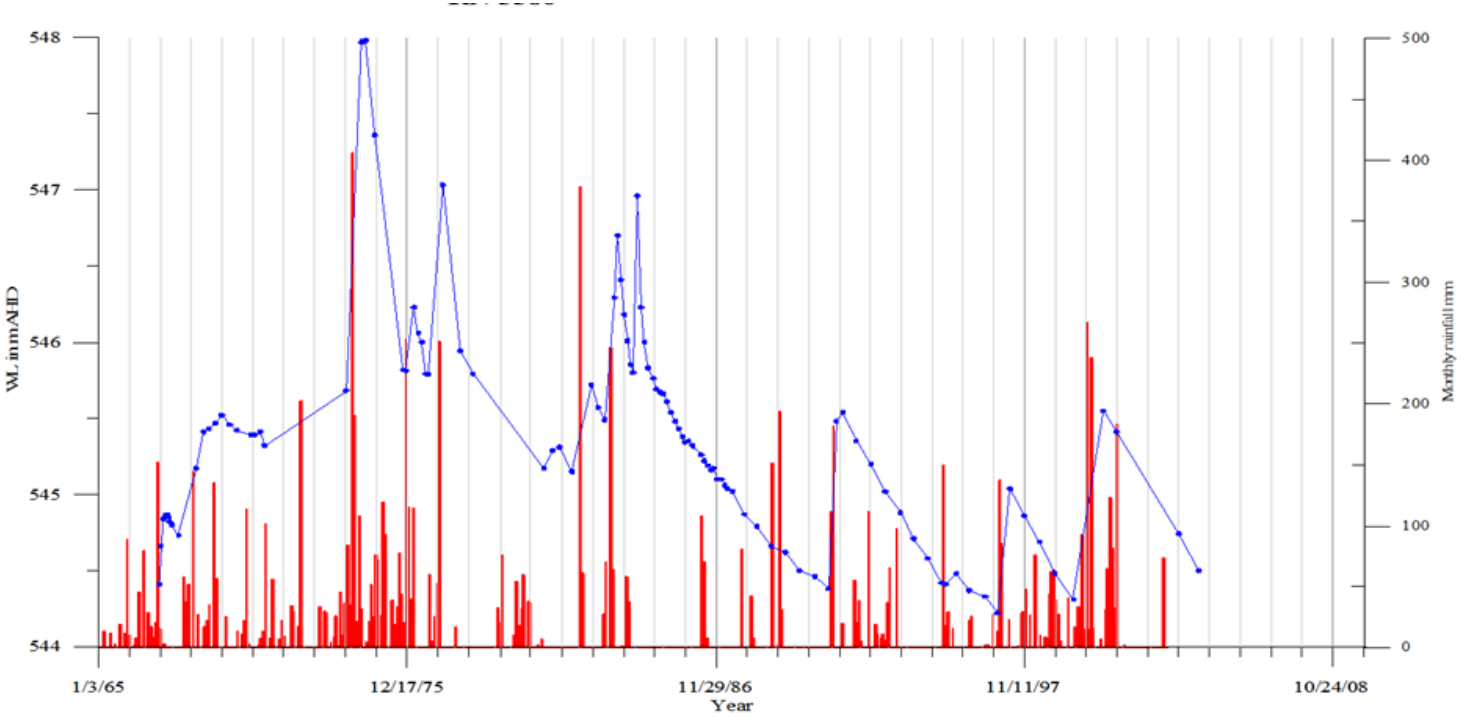
Groundwater levels

- Max/Min water levels show the response of aquifer system to pumping stress
- In some wells 10+ year declines in water level occur between sparse recharge events



Recharge

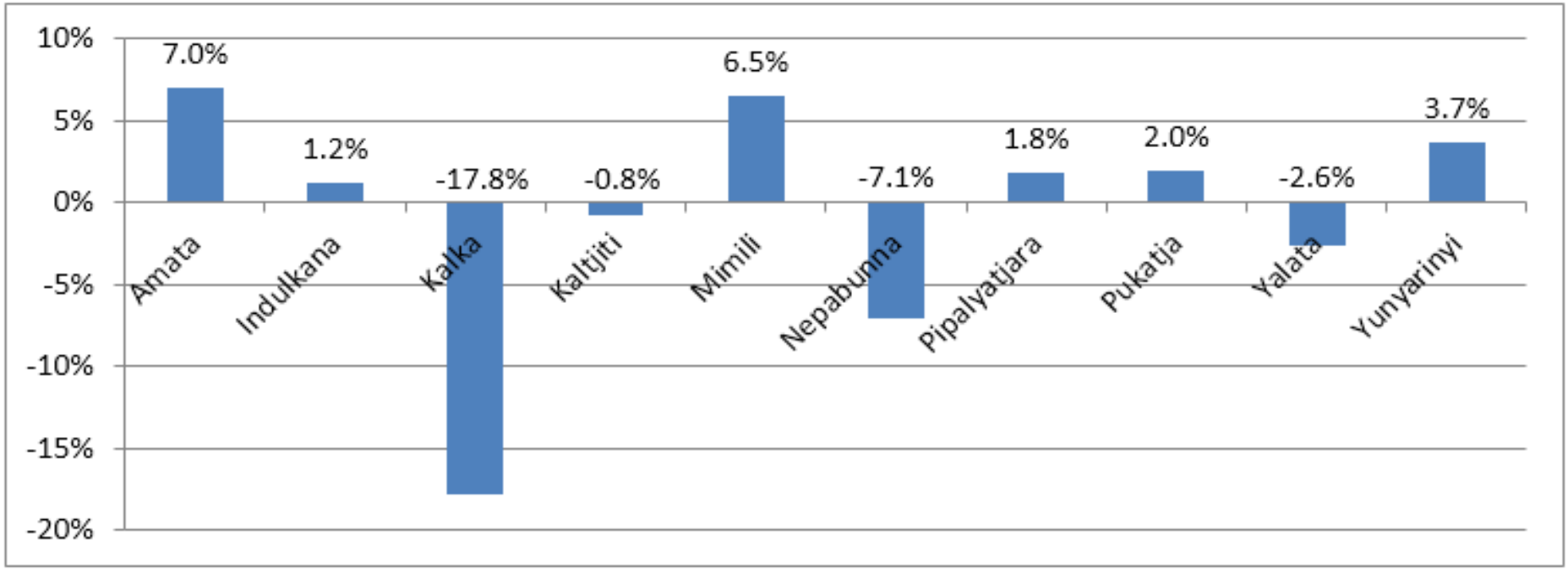
- Water level may require major event >100 mm for recharge to occur



- **Figure provided by Bob Read**

Demand

- Growth in occurring at some communities
- Demand can be expected to increase with expectations of a higher standard of living and in particular better health
- Amata, Mimili increase in water use 6-7%/annum



Annual change in water use over the period of data available

Hydrogeological knowledge

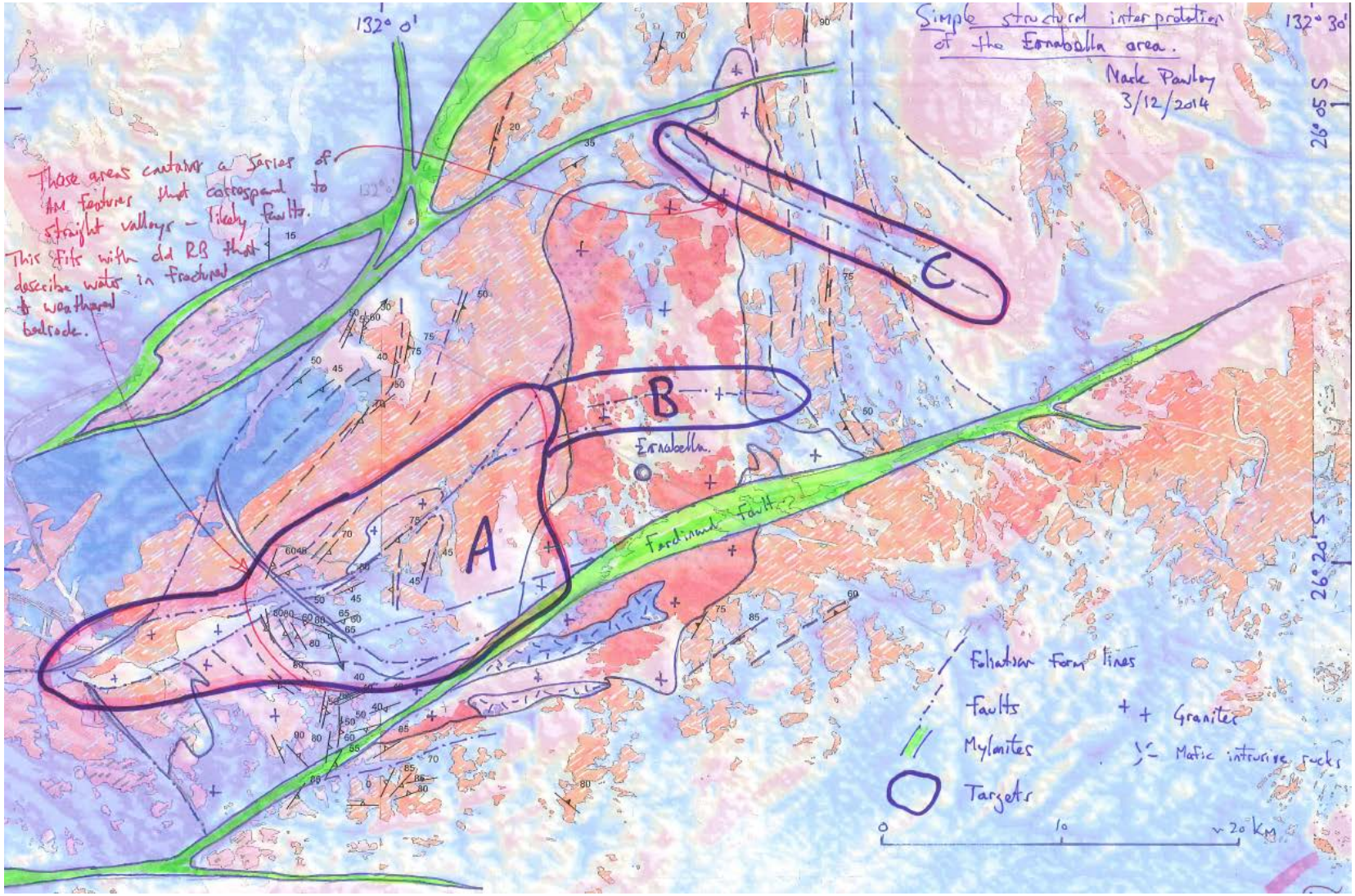
- Knowledge of hydrogeology around each community is limited
- Need observation wells to ensure understand regional response of the aquifer systems
- Capacity of production wells is often poor over the longer term
- Ideally need to locate permanent groundwater supply with long term sustainability rather than seek new wide-spread sites

2015 Water exploration

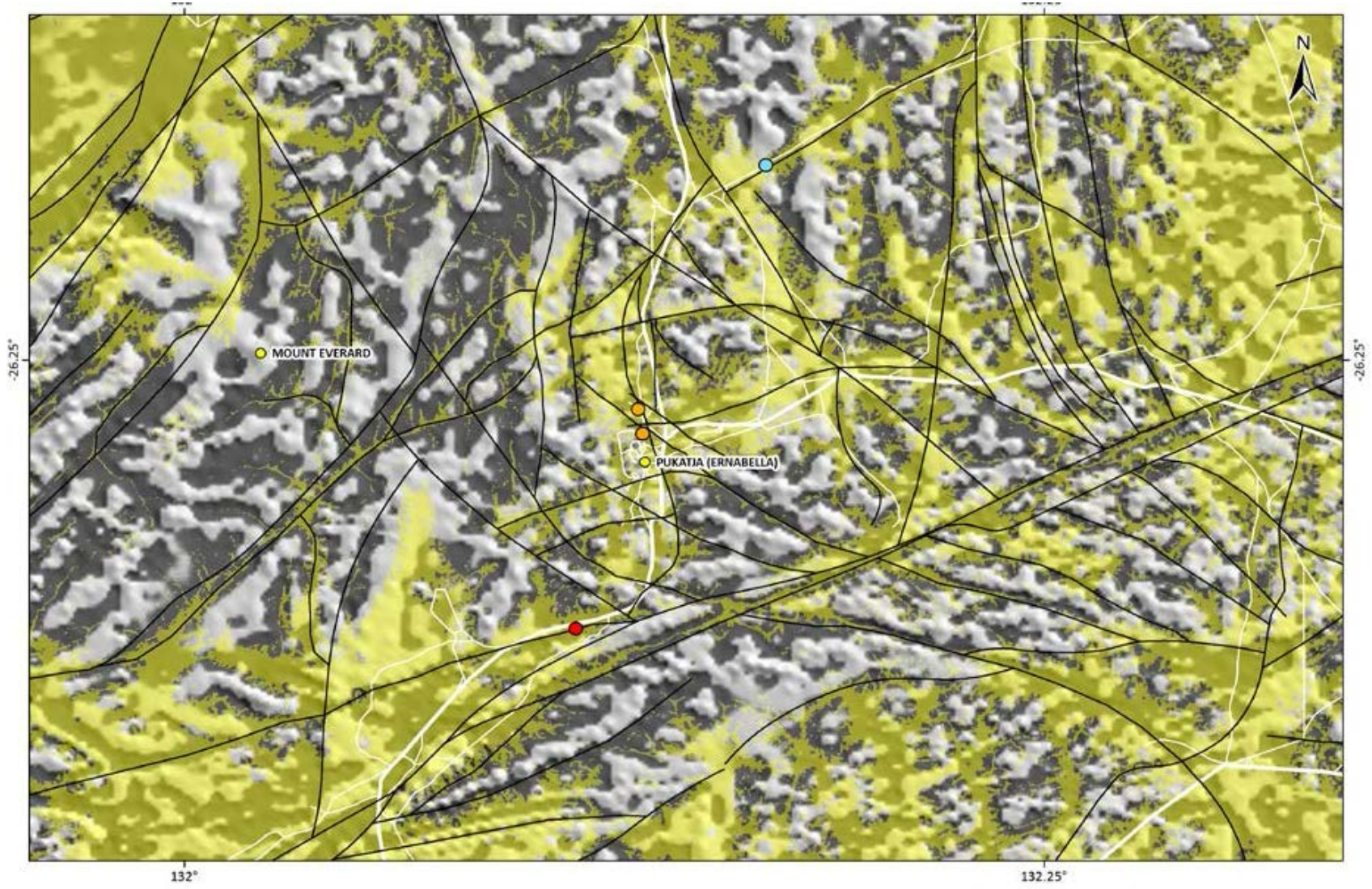
Up to 24 production wells for:

- SA Water – water for Aboriginal community water supply
- DPTI - water for construction of the new $108m road into the APY Lands which has commenced

Well locations based on unpublished regional mapping



Well locations based on airborne magnetic data which highlights structural features



Climate change

CSIRO / BoM studied effect of climate change on South Australia and concluded:

- Increased temperatures
- Reduced rainfall
- Increased rainfall variability
- Increased evaporation
- Significantly increased drought frequency and severity
- Changes in frequency of extreme events inc. floods

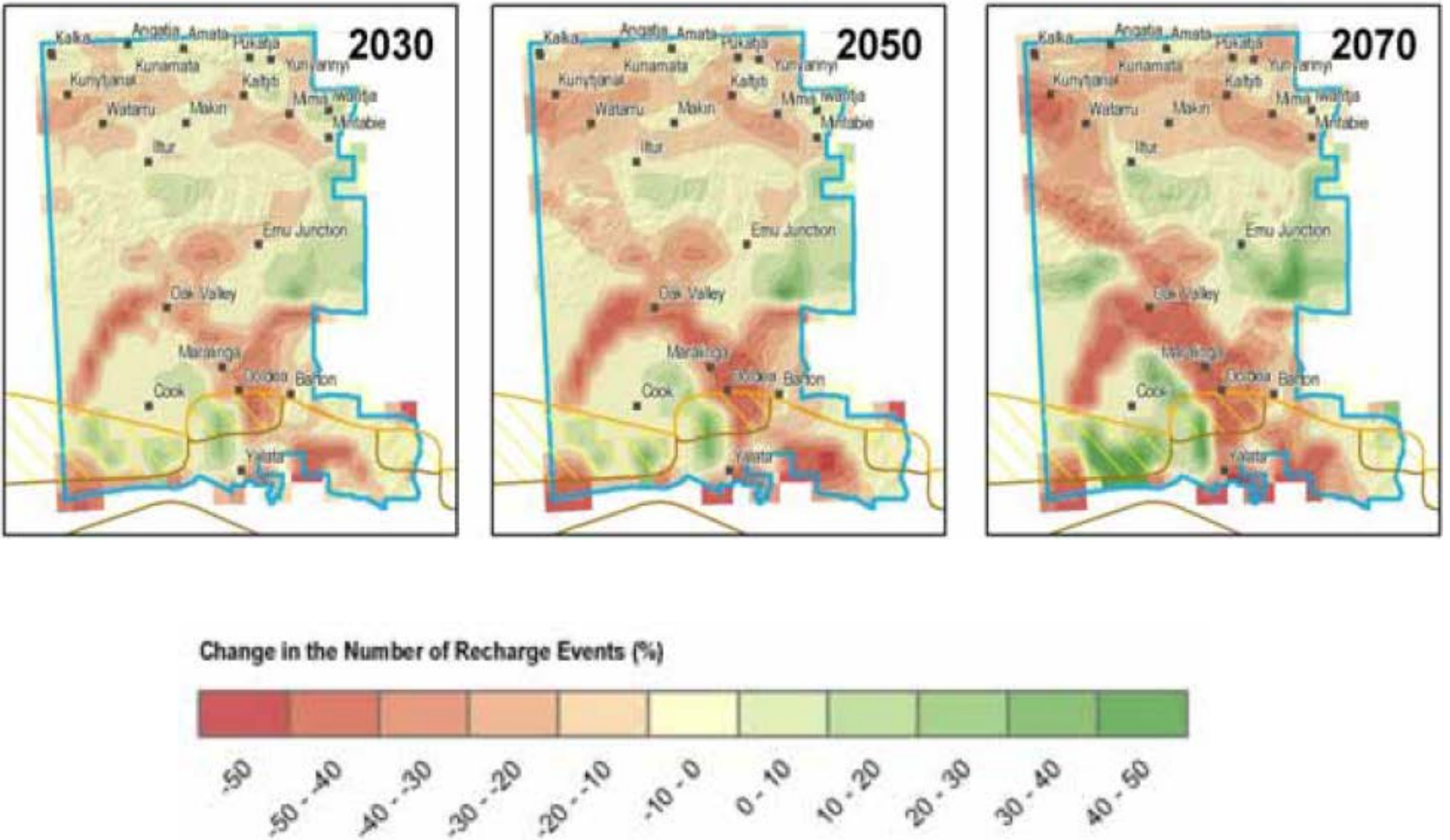
With projected impacts of climate change leading to a generally drier outlook, the State may face reduced availability and increased risk to groundwater resources that are of strategic and economic importance

DEWNR studied groundwater recharge & rainfall intensity impacts on groundwater

- Table indicates resultant projected risk to capacity of groundwater resources resulting from climate change

Area/well	2030	2050	2070
Amata	High	High	High
Kalka	Low	Moderate	Moderate
Kaltjiti (Fregon)	High	Very high	Very high
Mimili	Low	Moderate	High
Pipalyatjara	Moderate	High	High
Pukatja (Ernabella)	High	Very high	Very high
Yunyarinyi (Kenmore Park)	High	Very high	Very high

Change in the Number of Recharge Events (%)



Mining

- There is considerable interest in mineral exploration in the APY Lands – blue areas are active
- Impacts from mining need to be managed to ensure no impact on Aboriginal communities