

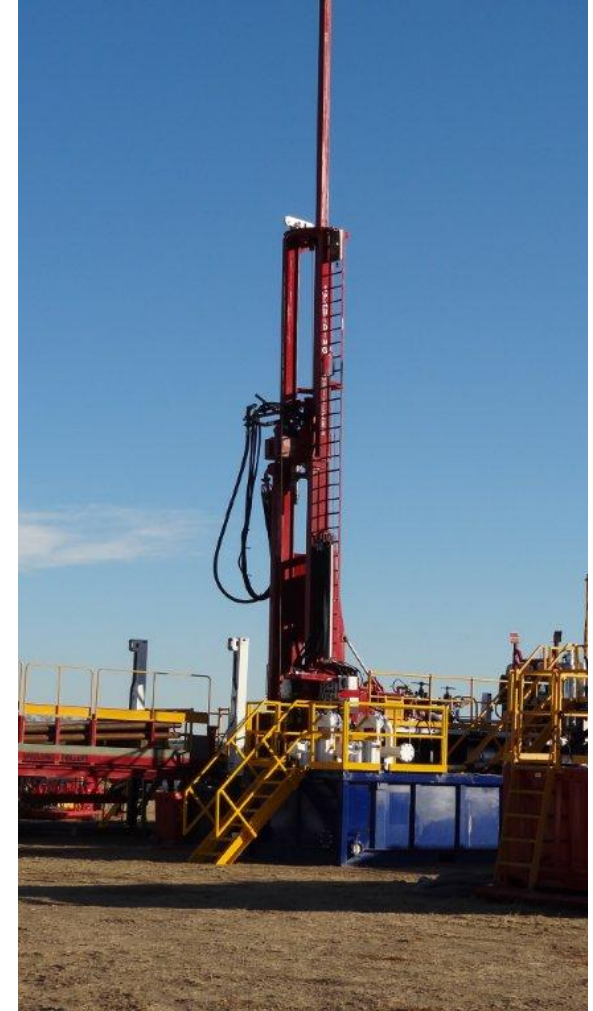
AgForce CSG Water Field Day Roma

Groundwater Investigation and Assessment Team (GIAT)

9th October 2013

Groundwater Investigation & Assessment Team (GIAT)

- Comprised of 7 staff
 - Qualifications in geology, hydrogeology, environmental engineering
 - Individuals with over 40 years practical experience in groundwater assessment and water bore construction



GIAT Responsibilities

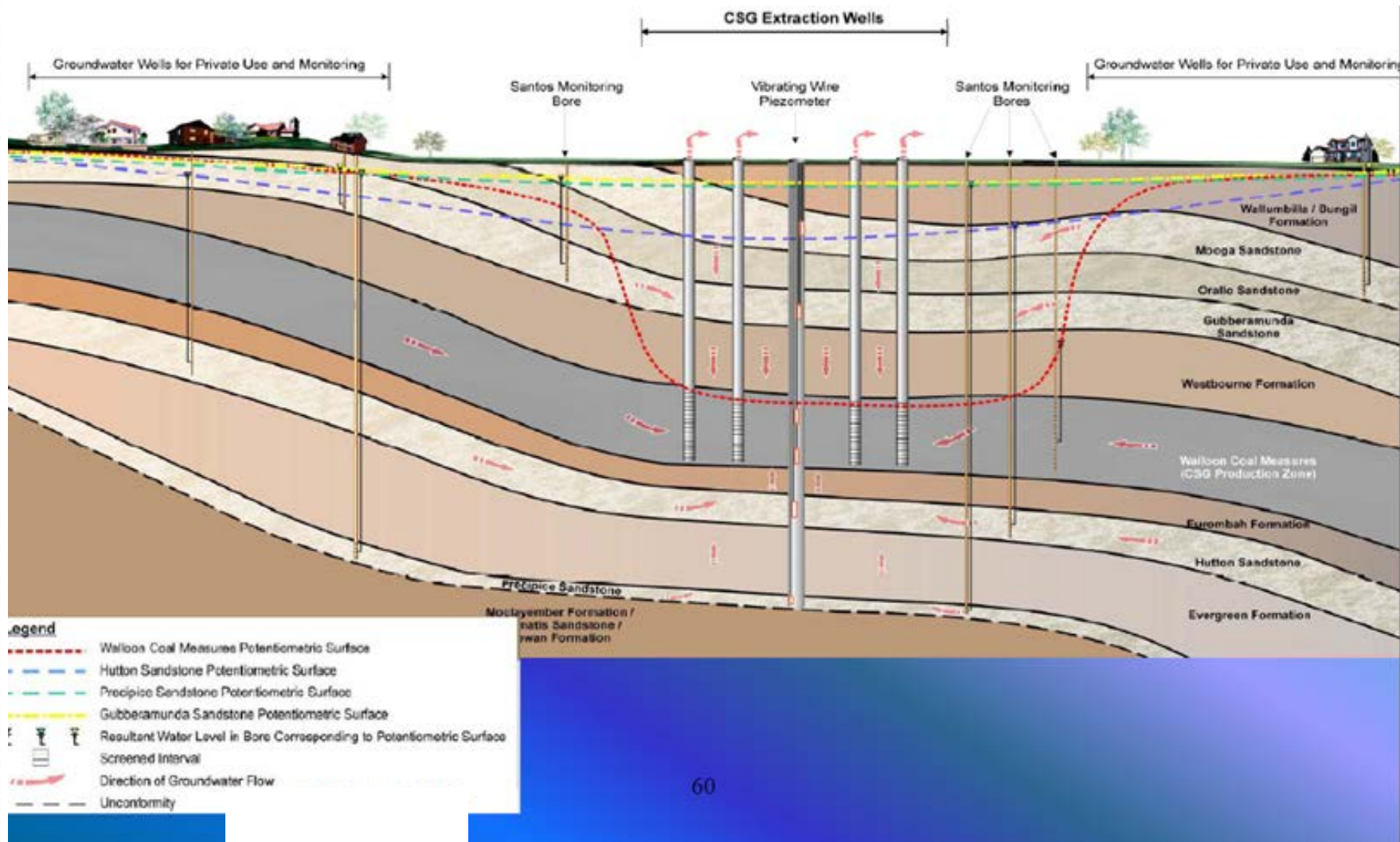
- Groundwater investigations of potentially impaired bores
- Implement and report on the independent bore monitoring program
- Audit water monitoring bore construction, well completion reports for water monitoring bores and water sampling procedures
- Engagement with industry and community stakeholders on CSG development and impacts

Groundwater Investigations of Potentially Impaired Bores

- Collating information from all available sources
- Water bore drillers log
- CSG & Petroleum Well Completion Reports
- Bore & Aquifer Condition / WL trend / stratigraphic location
- CSG development / water production / appraisal testing

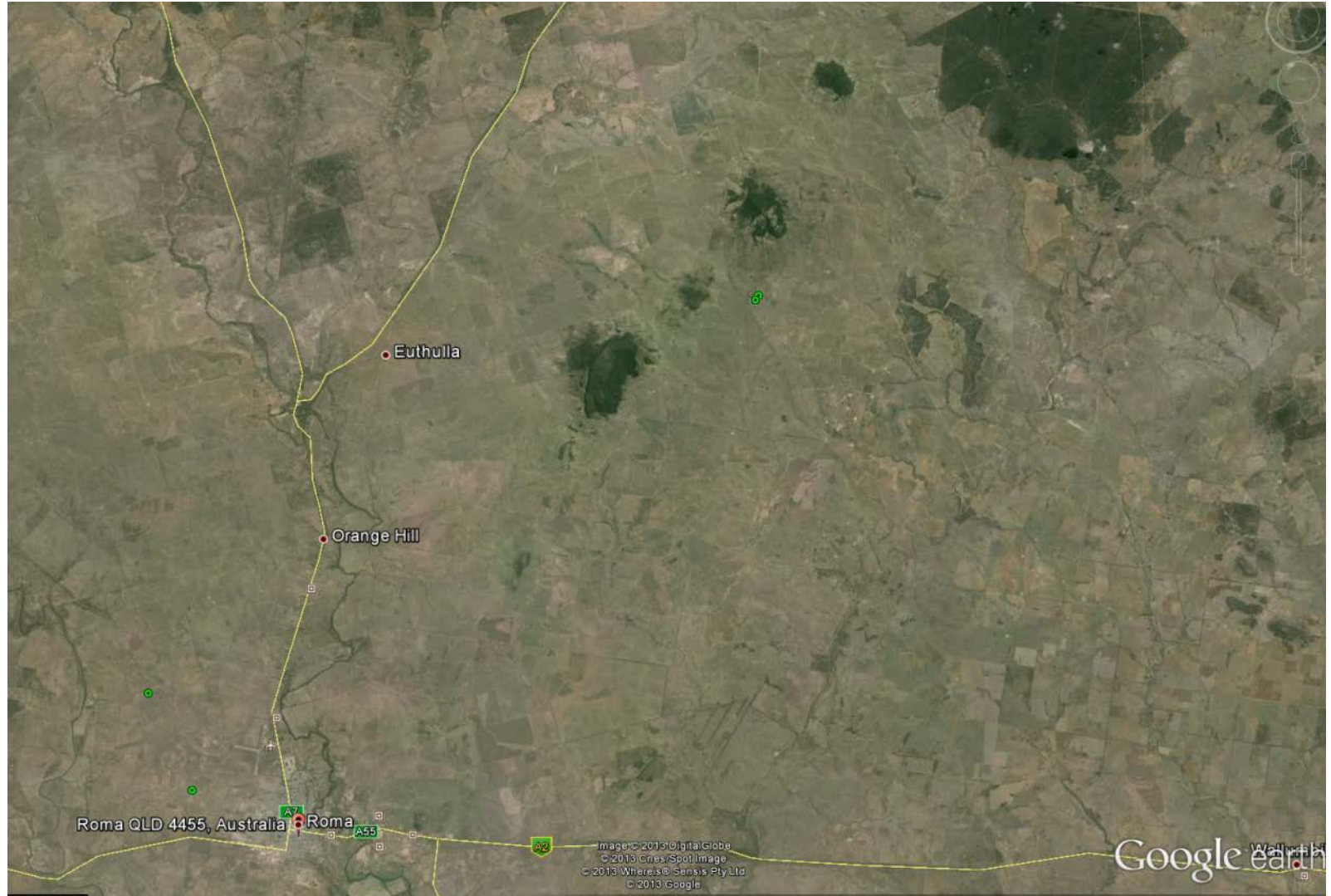


Groundwater Investigations Conceptual Drawdown Impacts from a CSG EIS

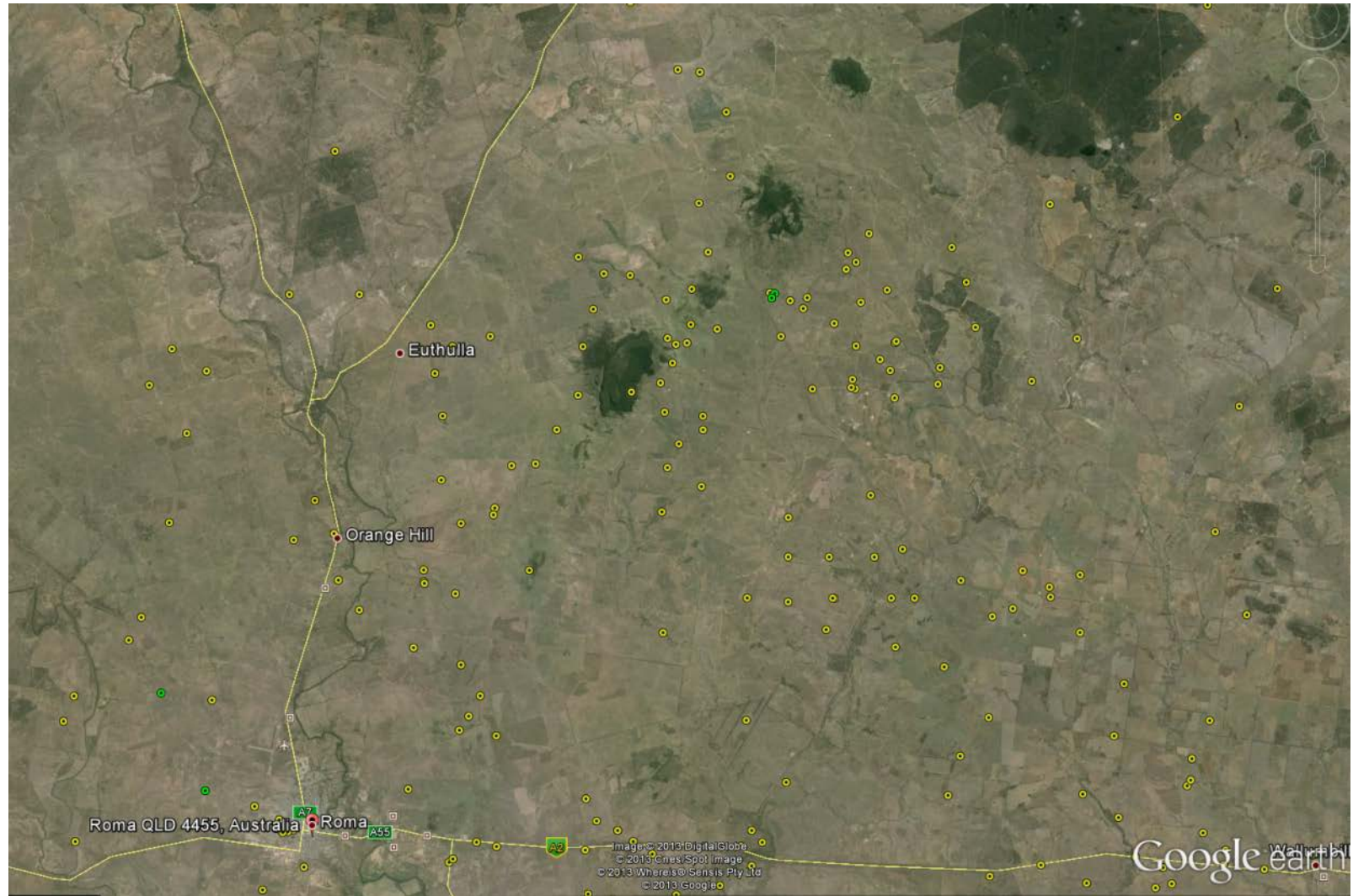


Groundwater Investigations

Roma area GSQ stratigraphic holes

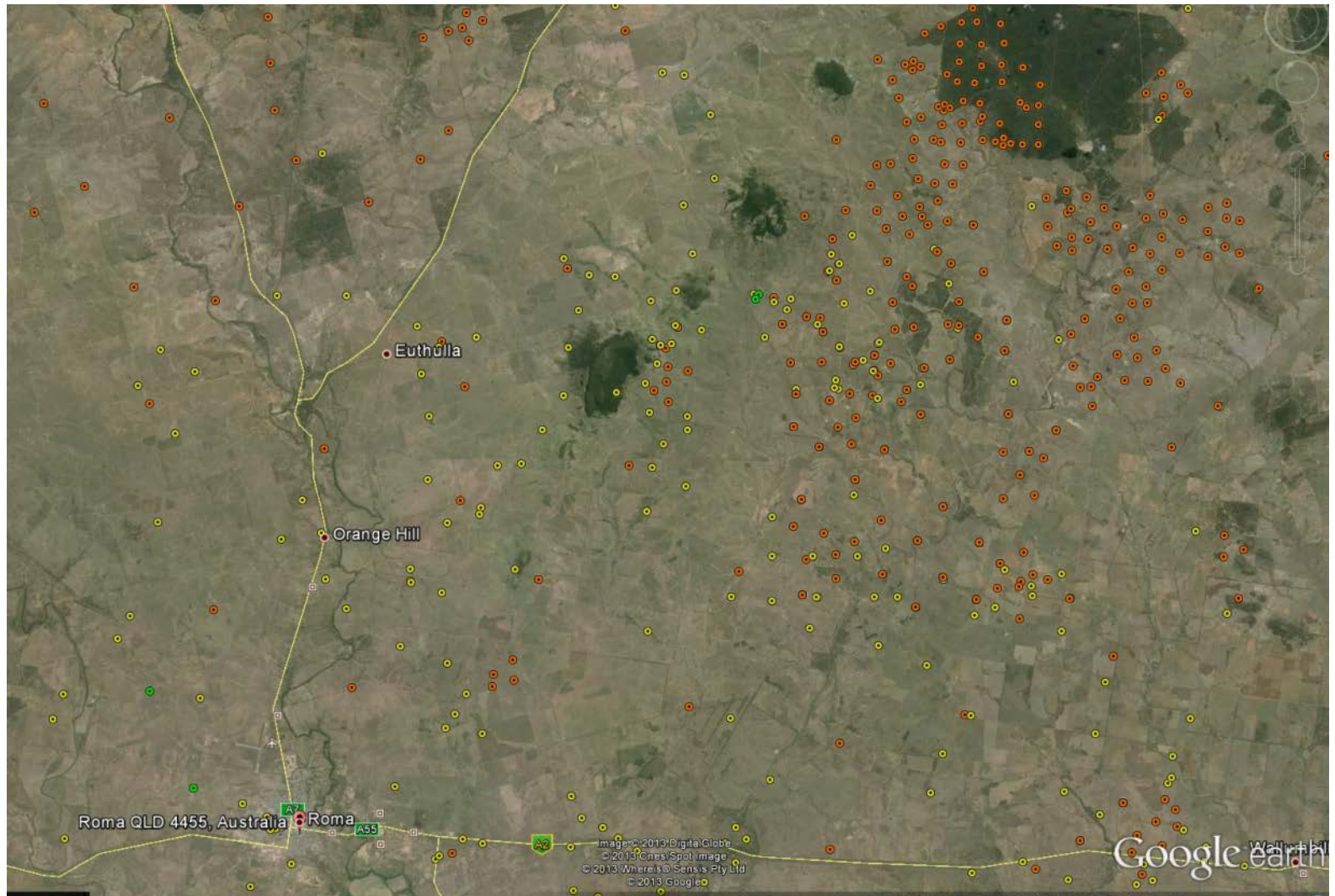


Groundwater Investigations Roma area petroleum wells



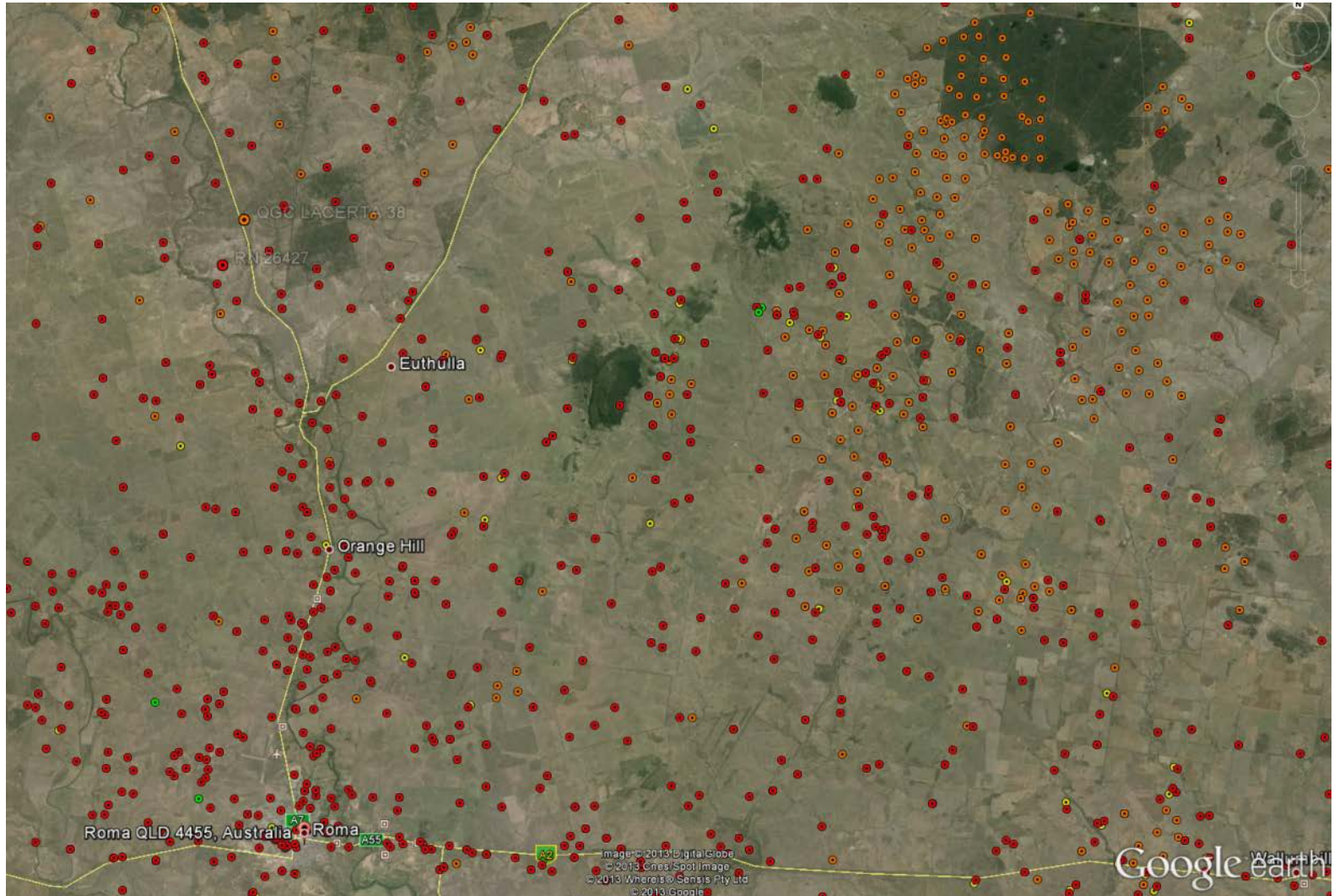
Groundwater Investigations

Roma area Coal Seam Gas wells

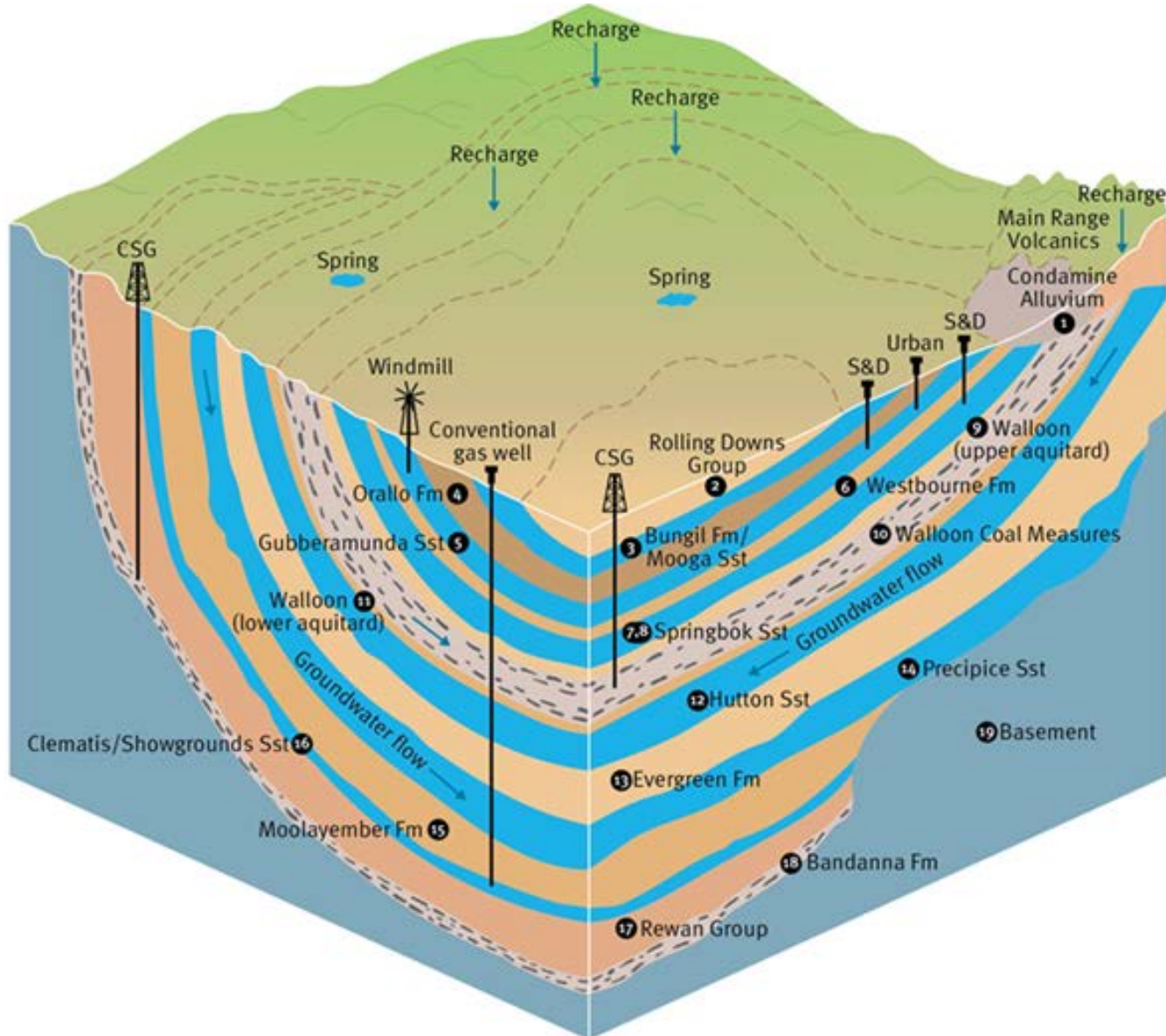


Groundwater Investigations

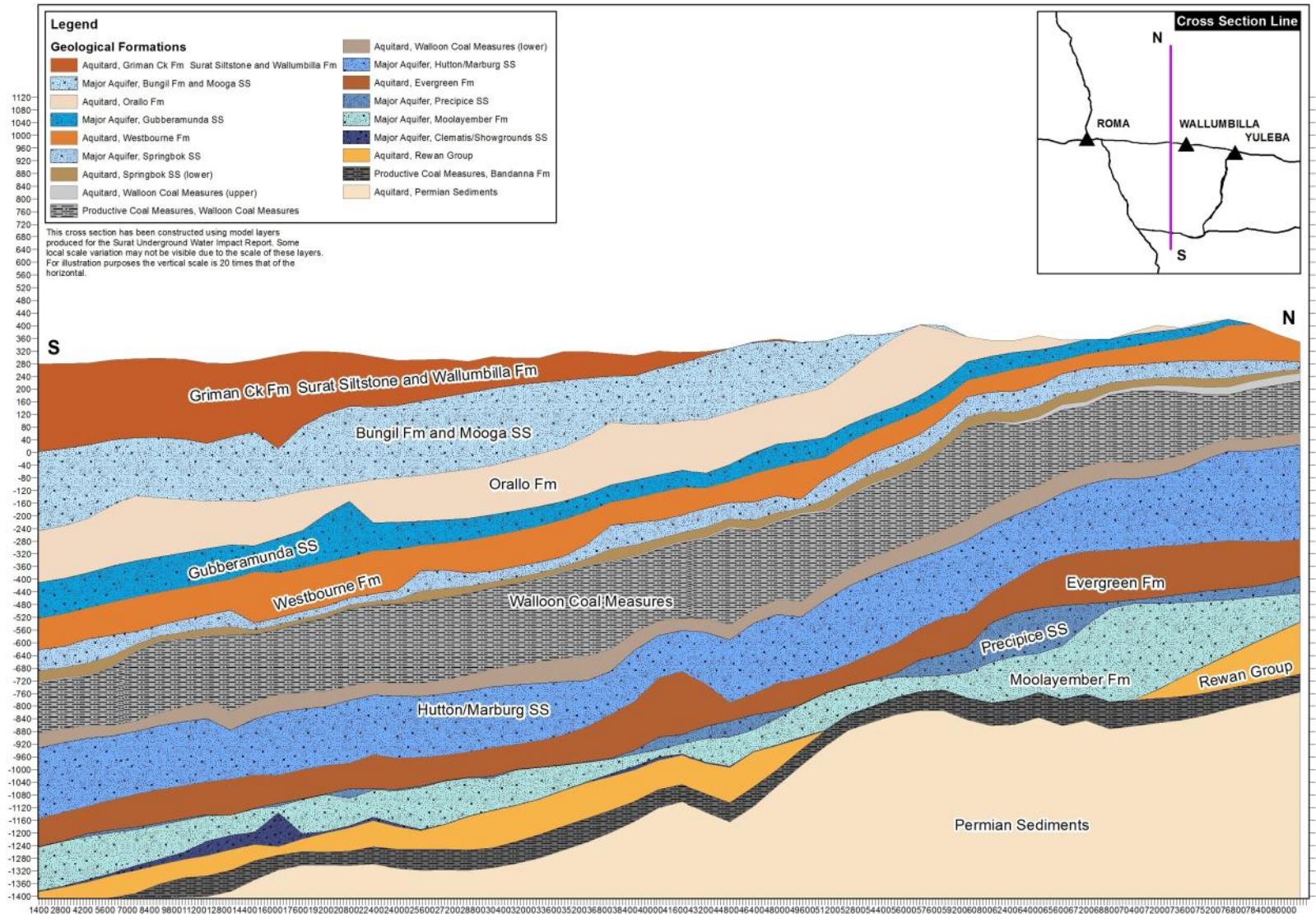
Roma area water bores



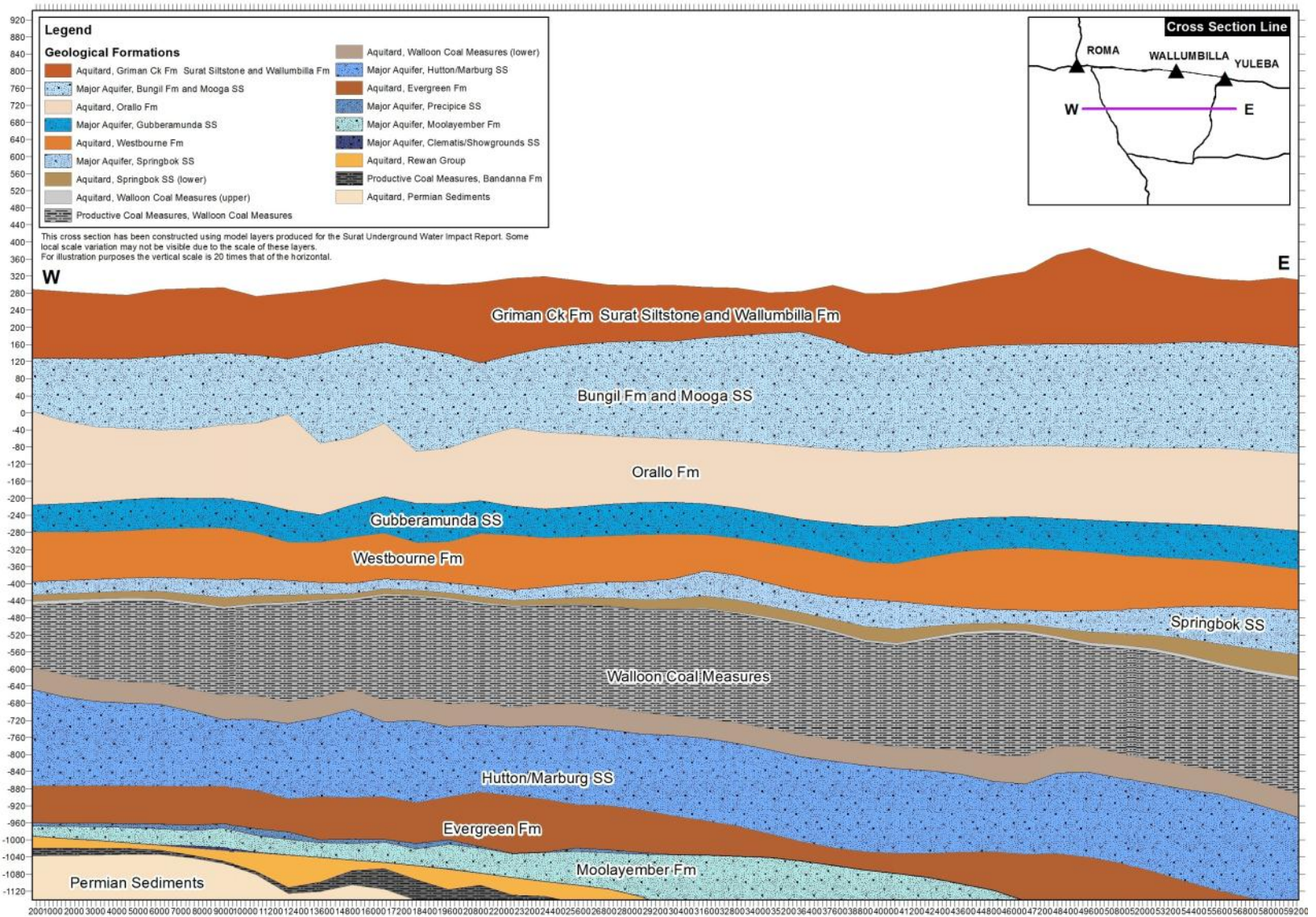
3D picture of the groundwater system



Groundwater Investigations – OGIA Model layers



Groundwater Investigations – OGIA Model layers



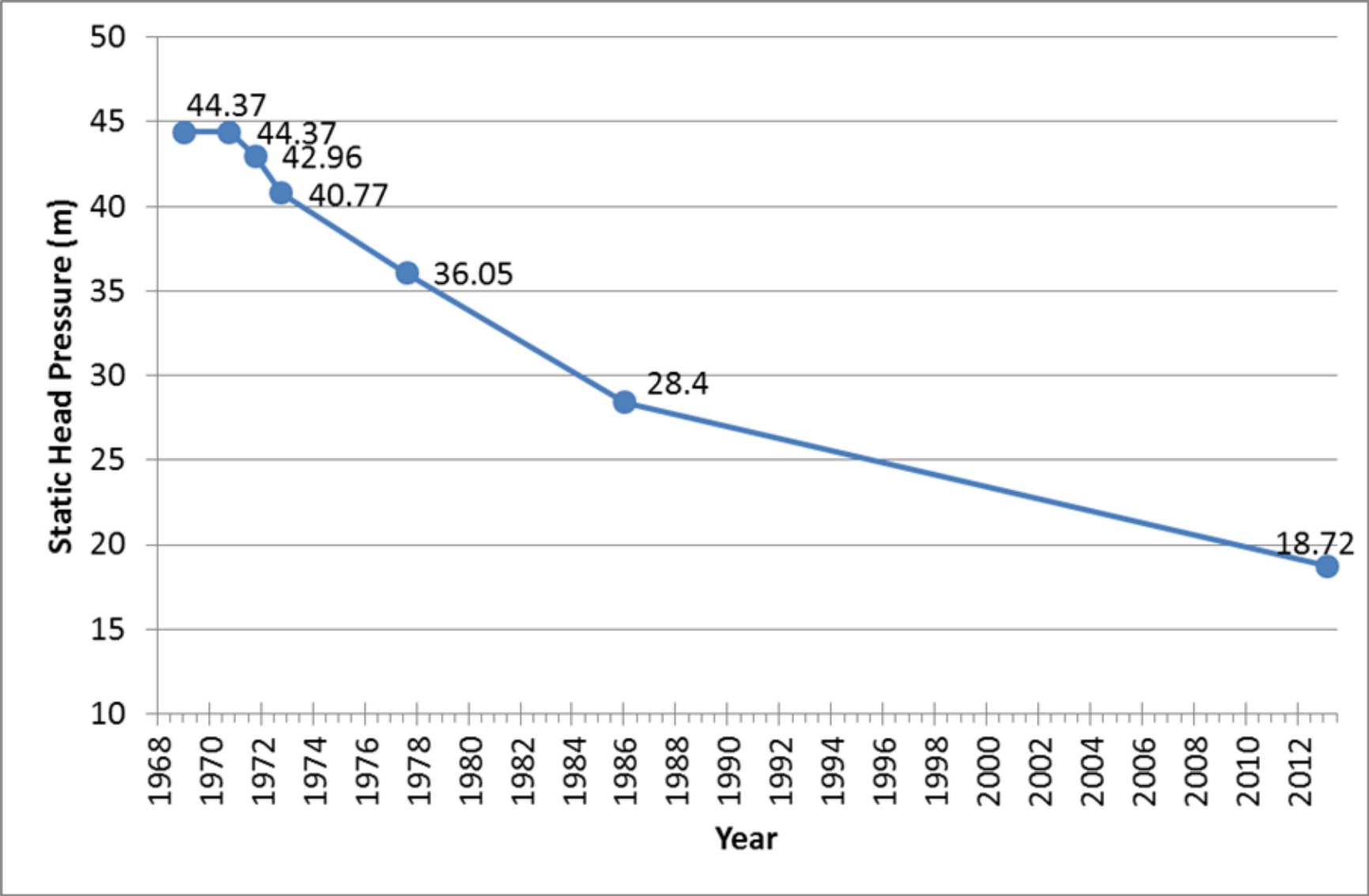
Groundwater Investigations – Pump Tests



Groundwater Investigations - Water Quality Testing

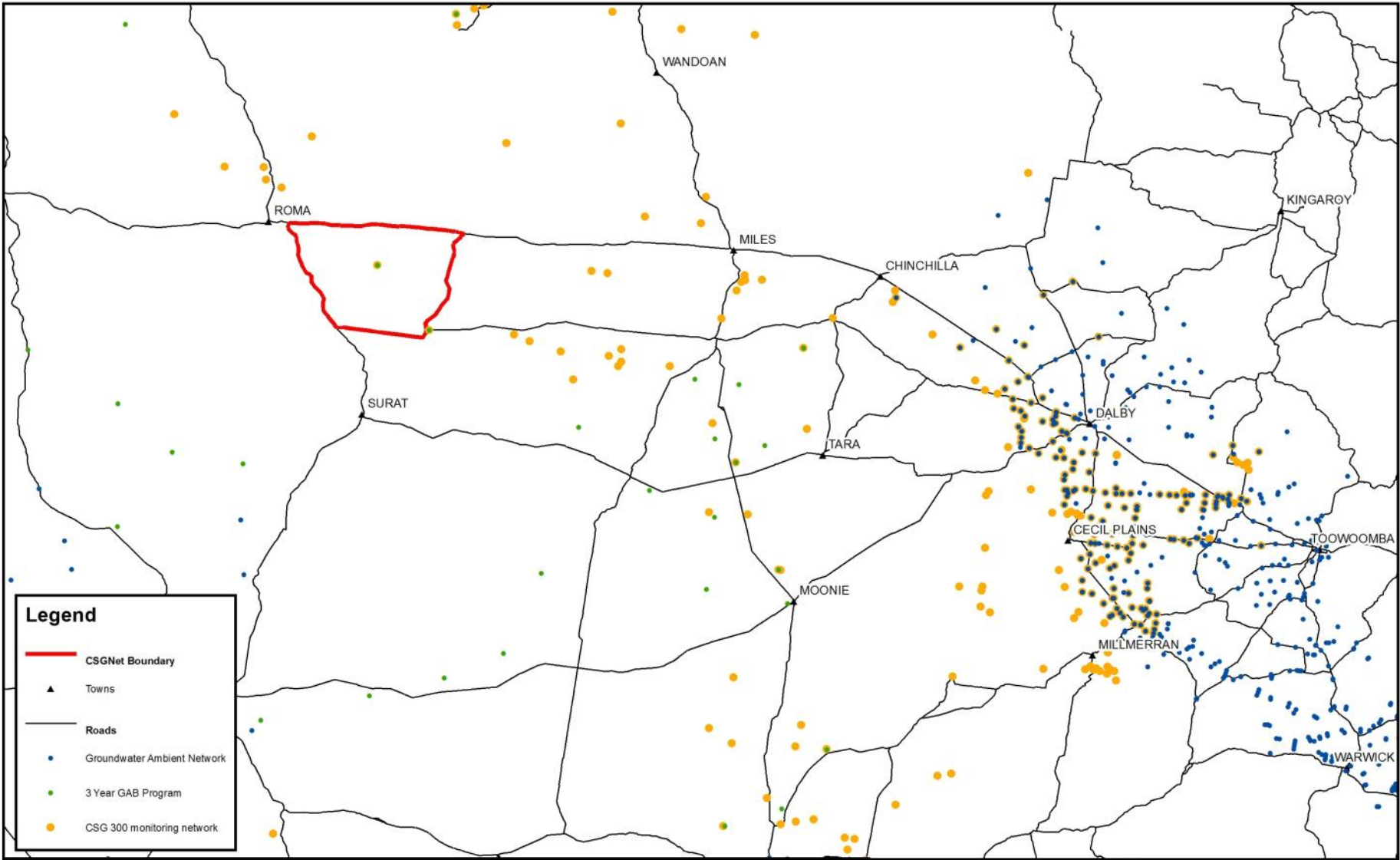


Bore Investigations – Regional Pressure Declines



Implement and report on the independent bore monitoring program





Legend

- CSGNet Boundary
- ▲ Towns
- Roads
- Groundwater Ambient Network
- 3 Year GAB Program
- CSG 300 monitoring network

CSGNet - Wallumbilla South
 DNRM Existing Monitoring Networks

0 20 40 60 80km

SCALE AT A1 1:1,175,000

Department of Natural Resources and Mines

4 September 2013

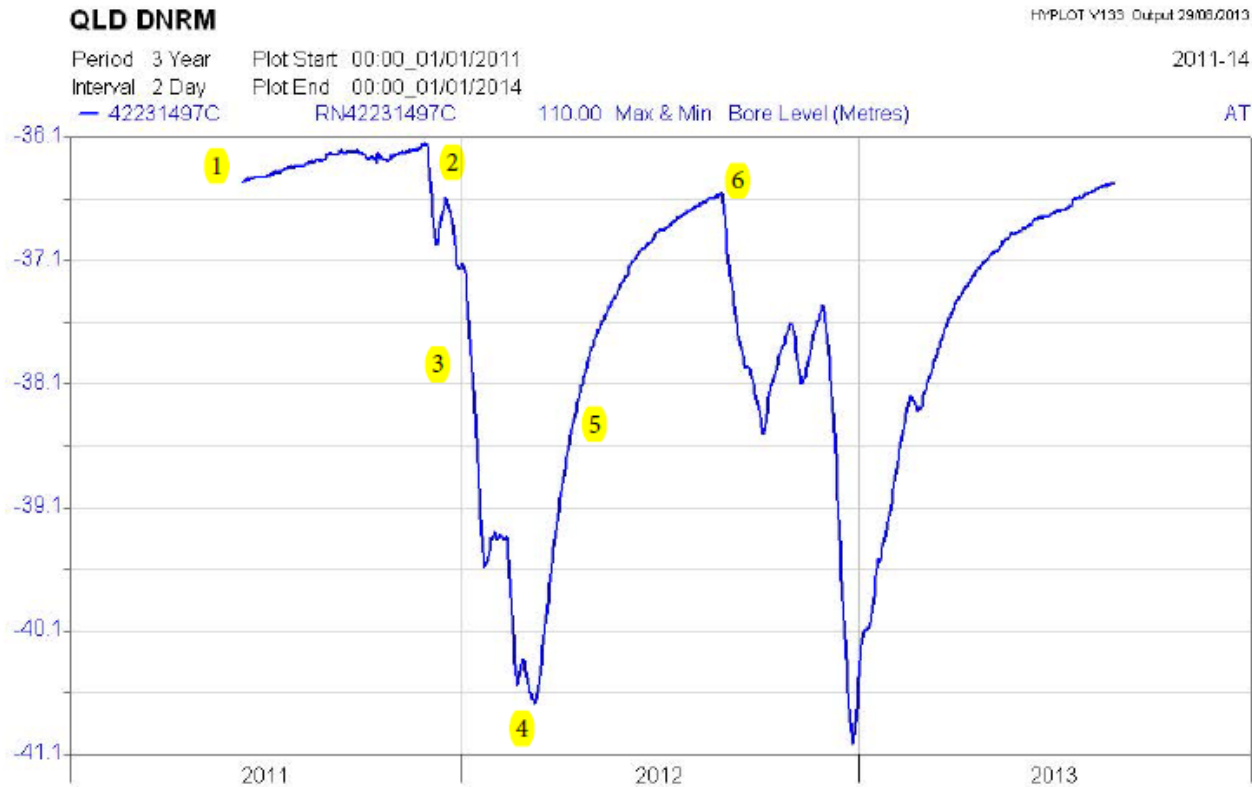
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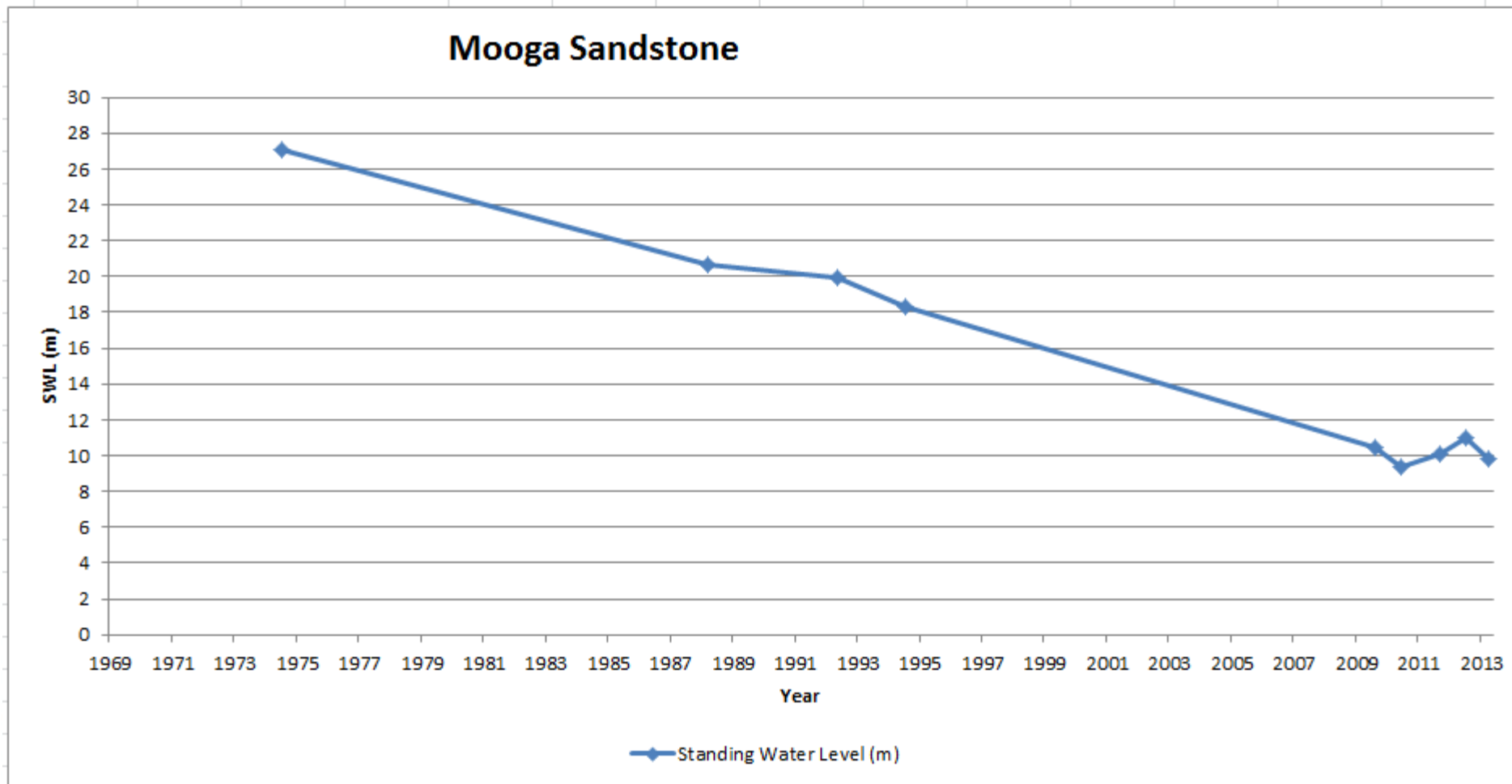
Queensland Government

What does the water level / pressure hydrograph tell us ?

- 1) Water level in aquifer.
- 2) Start of pumping
- 3) Drawdown in aquifer
- 4) End of pumping
- 5) Recovery in aquifer
- 6) Start of new pumping cycle



Historic Regional Pressure / Water Level Declines



Water pressure / level hydrograph

Trend overview tab Example Water Level Hydrograph (Santos GW Portal)

- Location Map
- Project Photos
- File Downloads
- Soil Moisture Summary
- Settings
- Logout
- Site List**
- AWS
- Dams
- Ephemeral Streams
- Avalon Bore - AVLGWH
- Basalt Creek Clay Hole

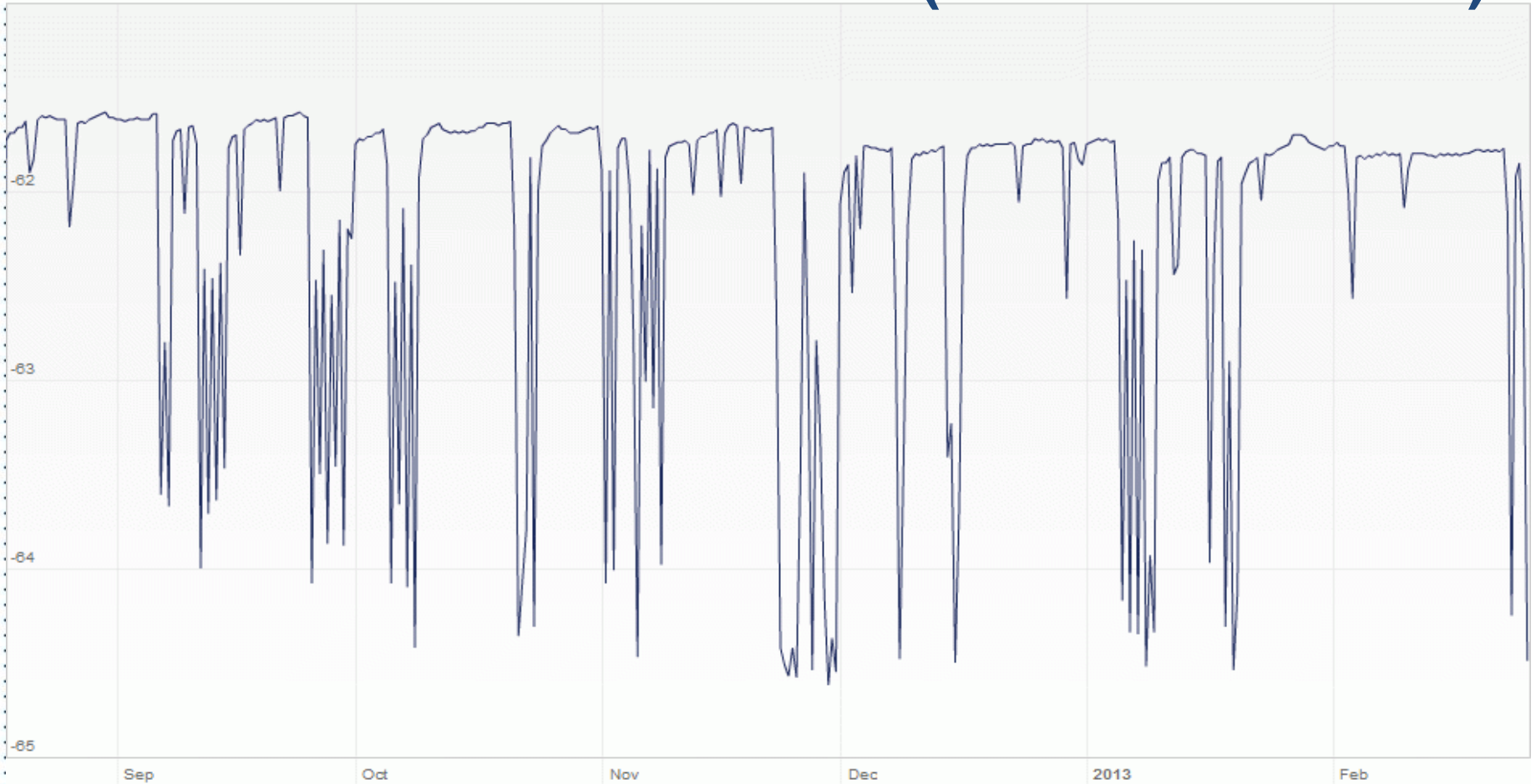


**Bore use pattern: weekly,
monthly, quarterly & longer**

Example Water Level Hydrograph (Santos GW Portal)

HISTORIC TREND

● Level: Min: -64.62m Max: -61.58m



Zoom:

● Water Level (m) 12hour AVG

Audit CSG Company Monitoring Bore Construction and Monitoring Procedures



Ensure monitoring bores meet either:
Minimum Construction Standards or
Code of Practice for CSG wells

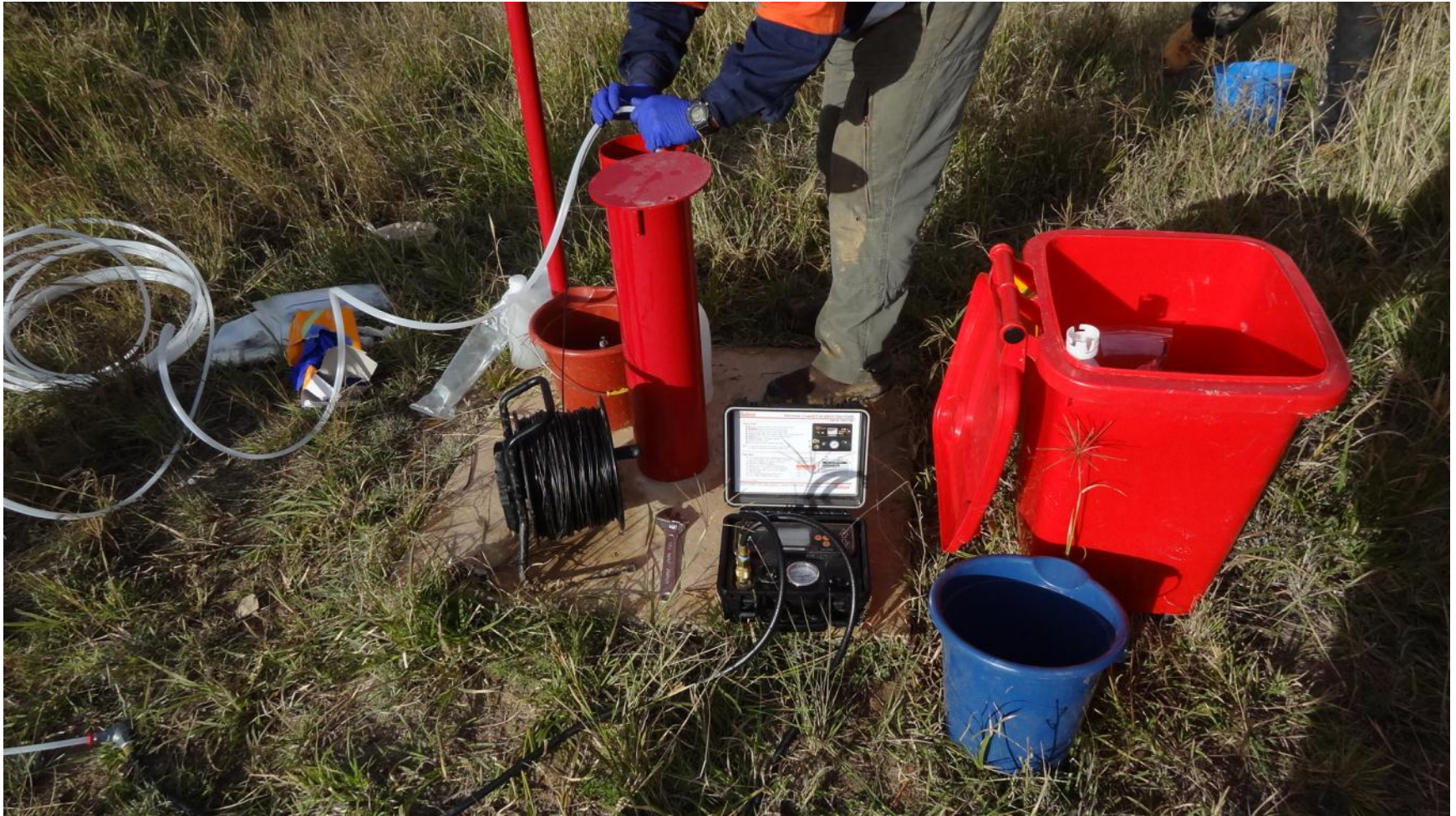
Ensure both Safe Work Practices (SWP's) and Standard Operating Procedures (SOP's) for all aspects of bore monitoring are best practice



Audit CSG Company Monitoring Bore Water Level / Pressure and Sampling Procedures



Audit CSG Company Monitoring Procedures



Audit CSG Company Monitoring Procedures



Audit CSG Company Groundwater Sampling, Preservation, Storage and Handling Procedures



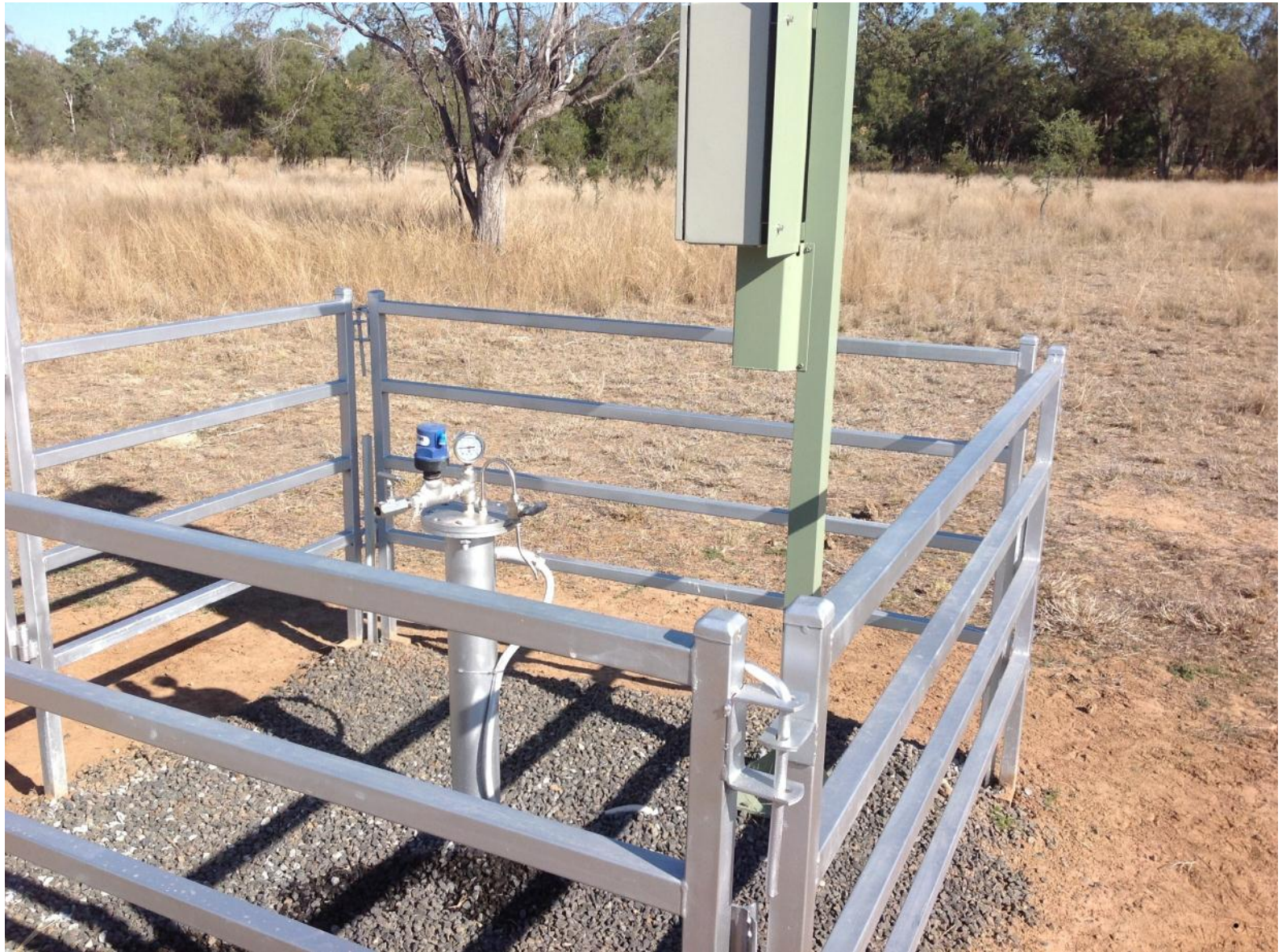
Audit CSG Company Monitoring Bore Construction Techniques and Procedures



Audit CSG Company Monitoring Bore Construction Techniques and Procedures



Completed CSG Water Monitoring Bore



Completed CSG Water Monitoring Bore



Completed CSG Water Monitoring Bore ready for manual monitoring



Engagement with Industry and Stakeholders on CSG Development and Impacts



Pilot CSG Workshop



AgForce Water Field Day Barcaldine



Questions



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