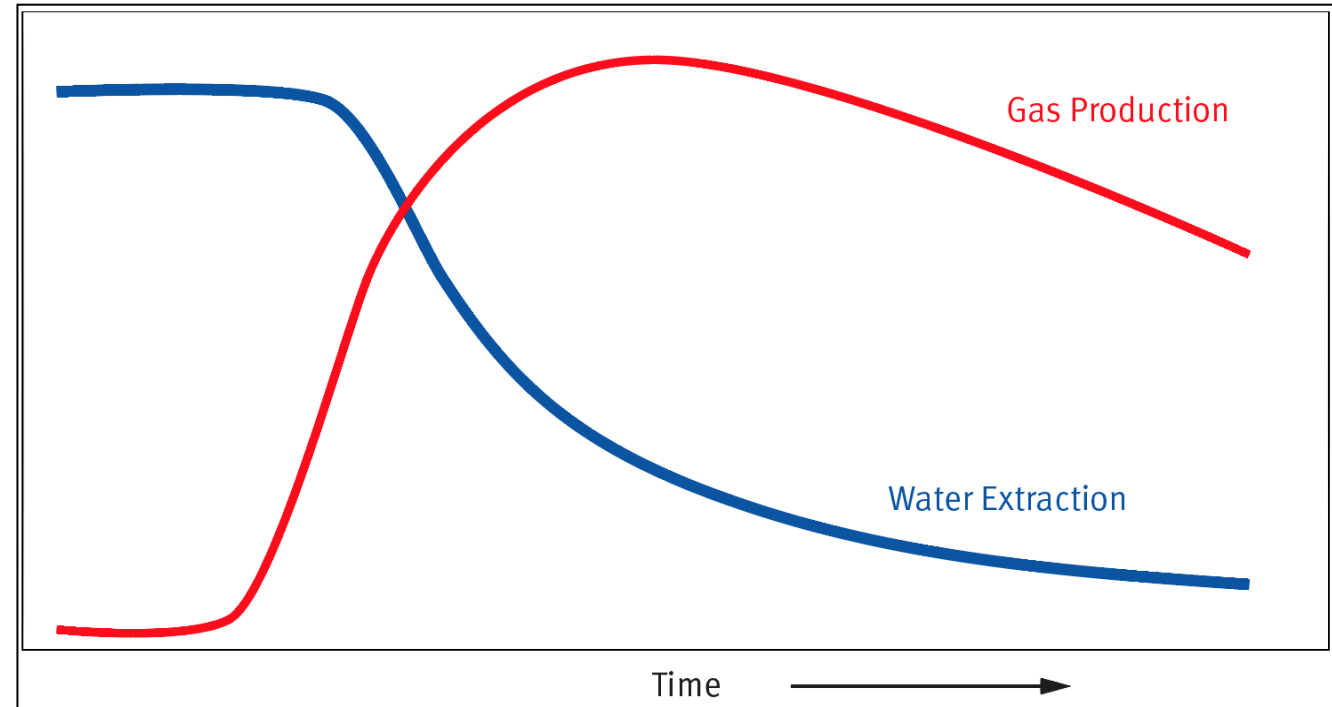
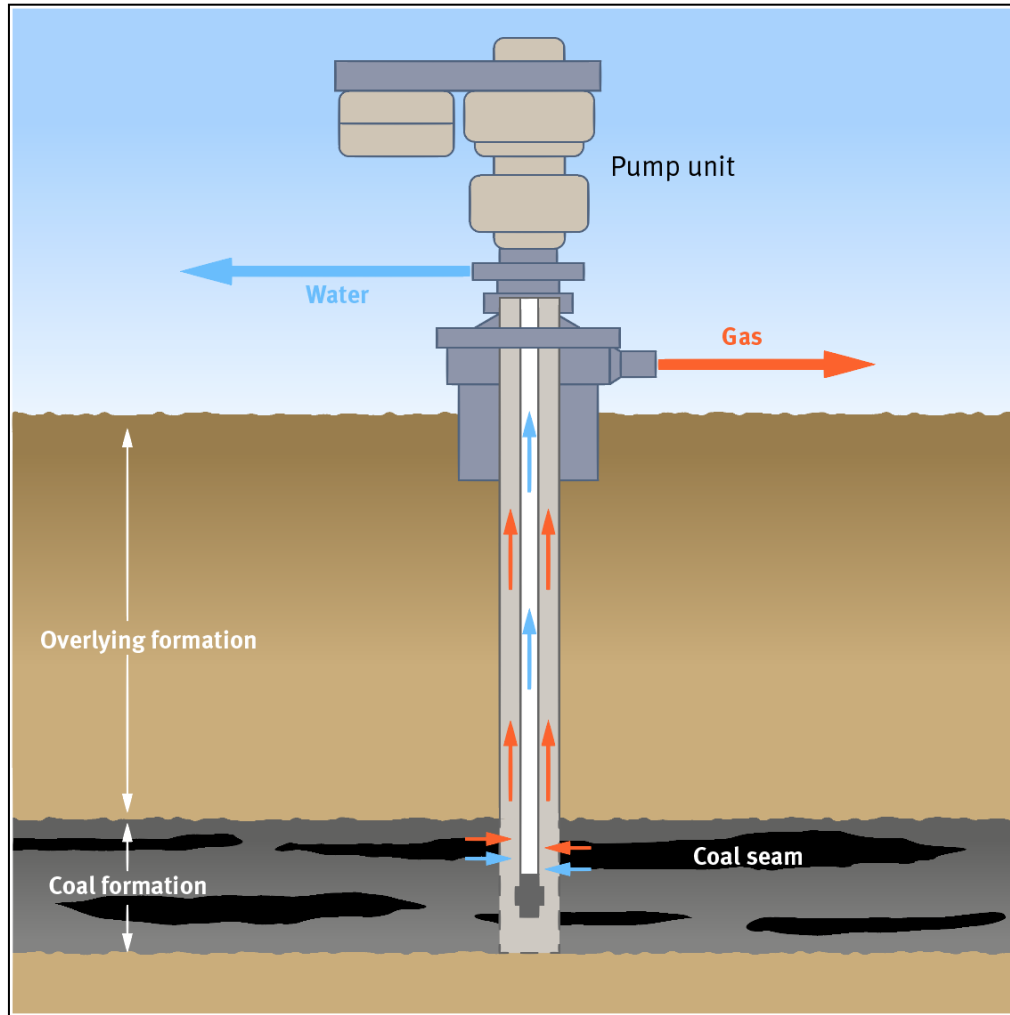


Surat Underground Water Impact Report 2016

Steven Flook

Office of Groundwater Impact Assessment

CSG Production

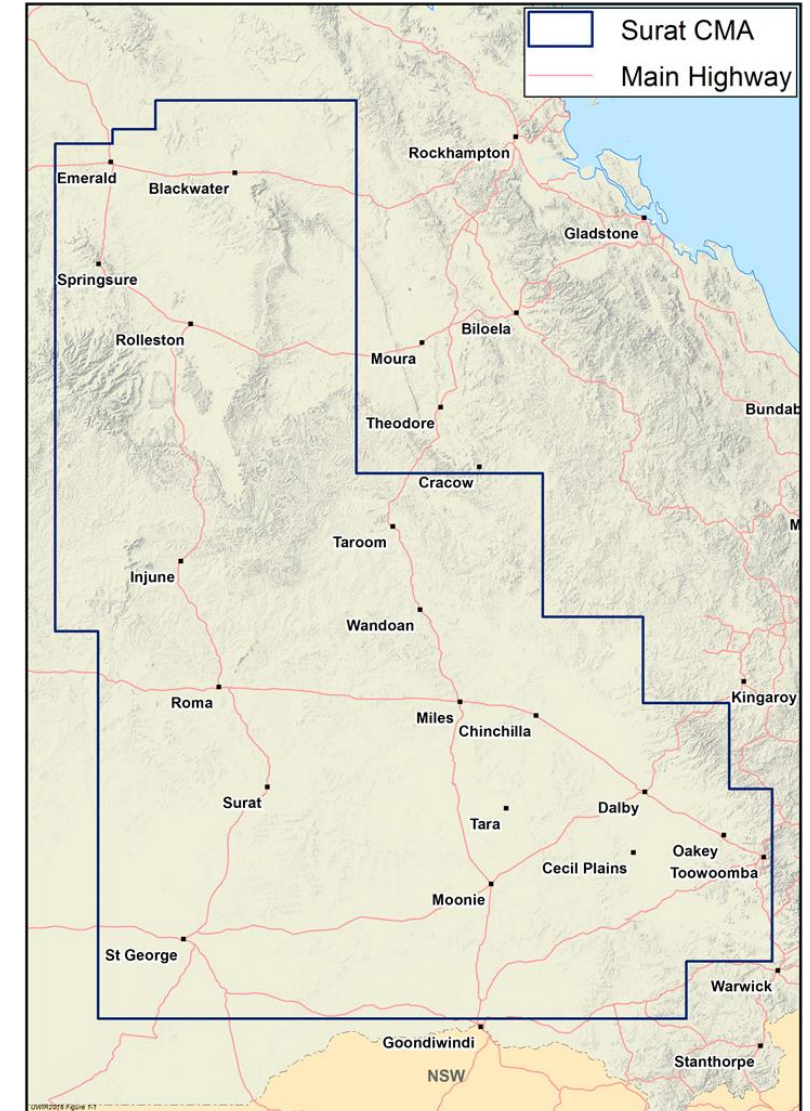


- **Petroleum and Gas (Safety and Production) Act 2004**
 - Right to take water in the production of P&G
 - Management of groundwater impacts of P&G activities is through other legislation
- **Environmental Protection Act 1994**
 - 'Environmental Authority' for P&G activities
- **Water Act 2000 (C3)**
 - Requirement to collect baseline data
 - Requirement to 'make good' impairment of bore supplies
 - For low intensity areas, tenure holder assessment and monitoring
 - For high intensity areas, cumulative management regime

Cumulative Management

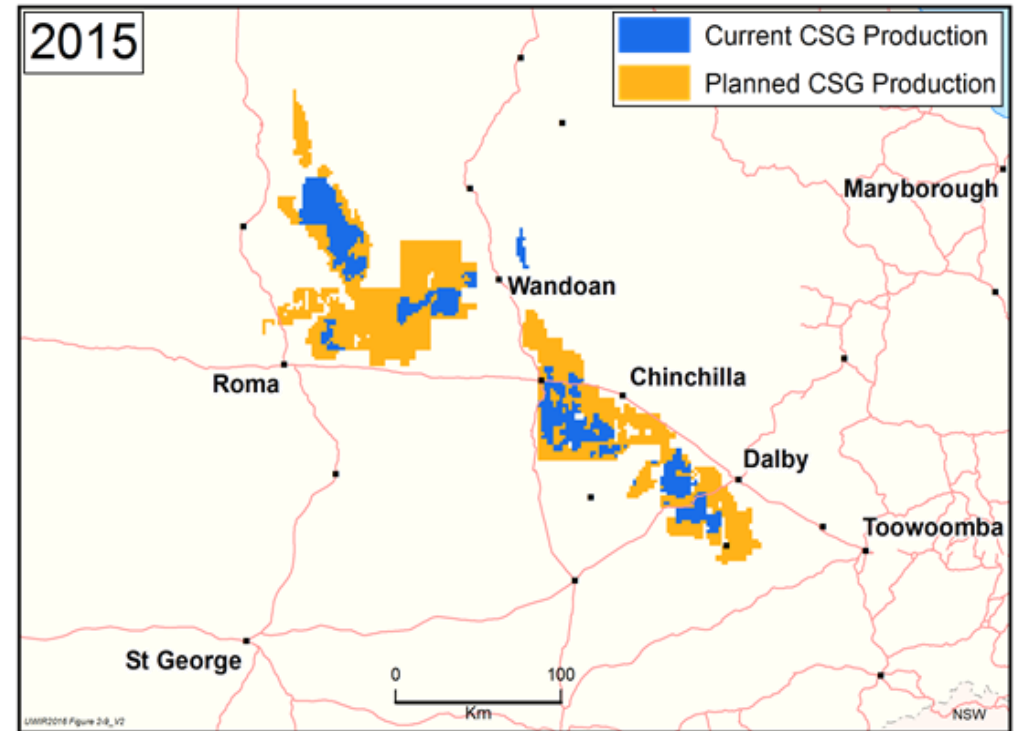
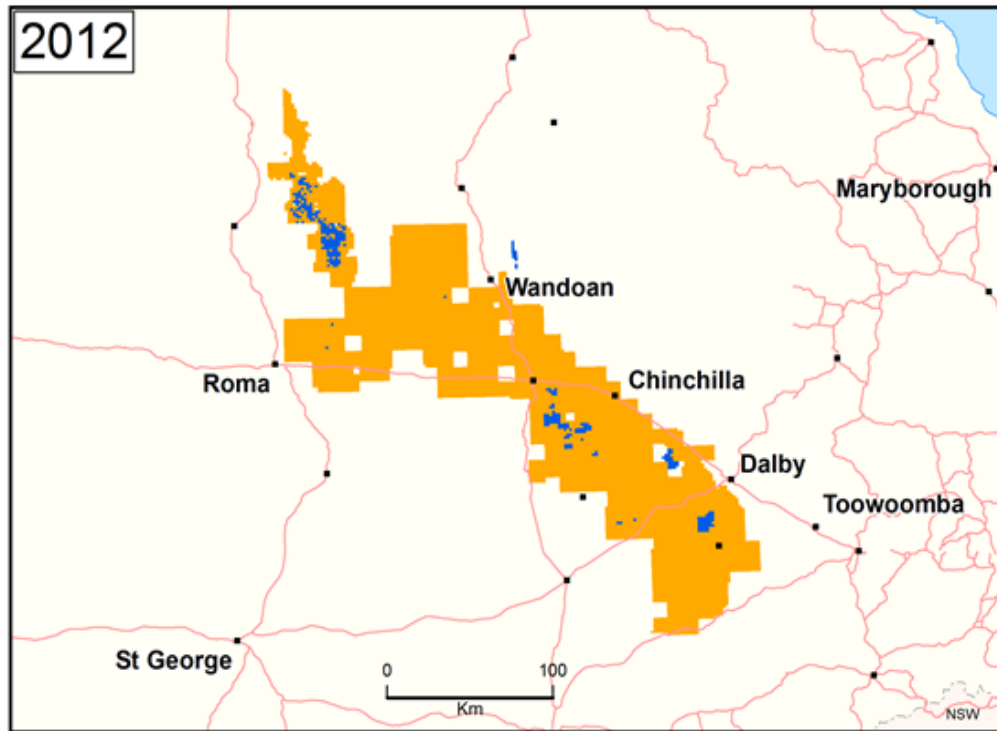
- An area with multiple operators can be declared a 'cumulative management area' (CMA)
- OGIA carries out cumulative assessment and prepares an 'underground water impact report' (UWIR) containing:
 - Predictions of impacts on water levels
 - Regional water monitoring strategy
 - Regional spring impact management strategy
 - Assignment of responsibilities to individual tenure holders
- Surat CMA established 2011
- Surat UWIR approved December 2012

Surat UWIR 2016 now being updated

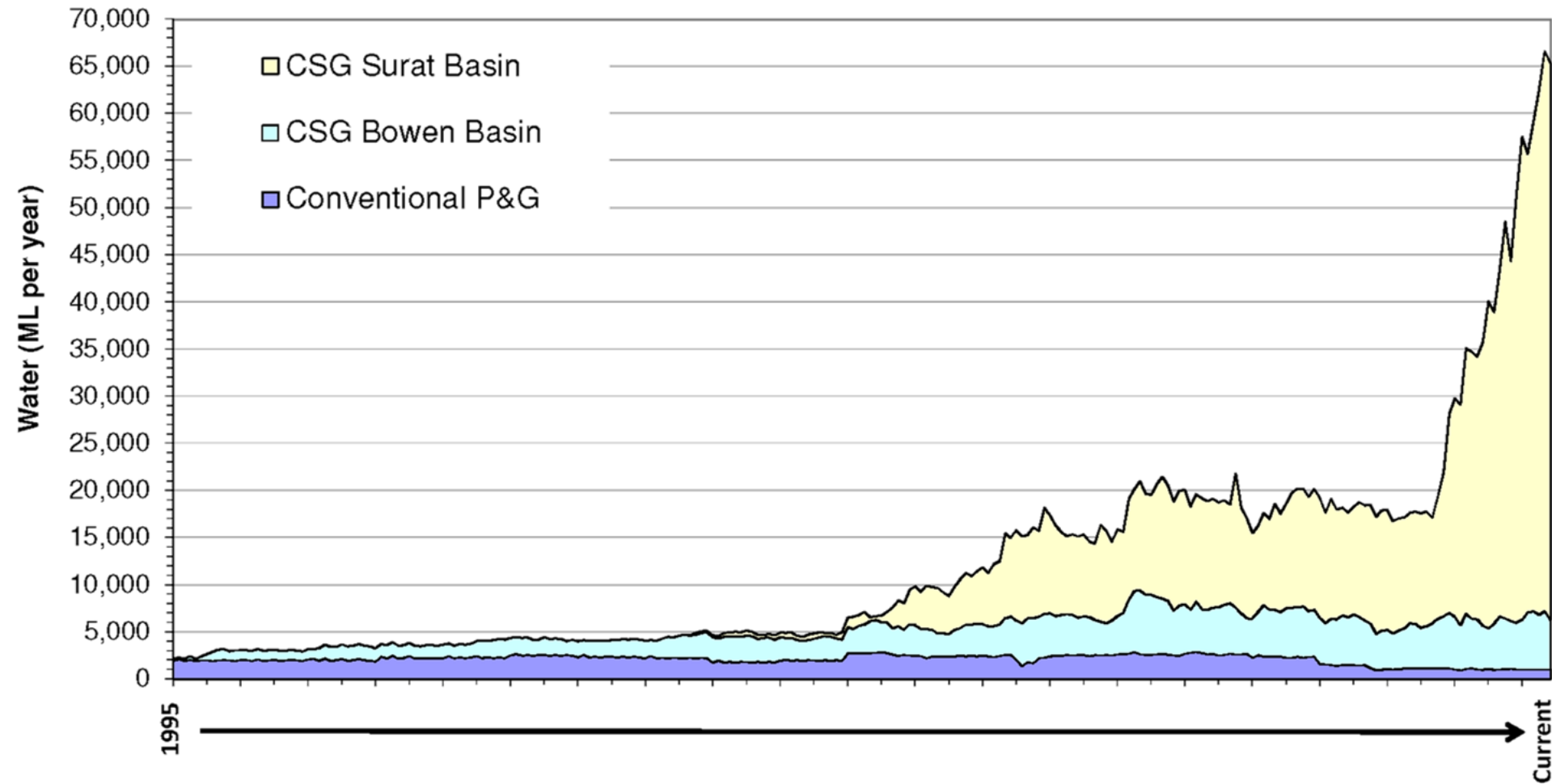


Surat Underground Water Impact Report 2016

Planned CSG development



P&G water extraction



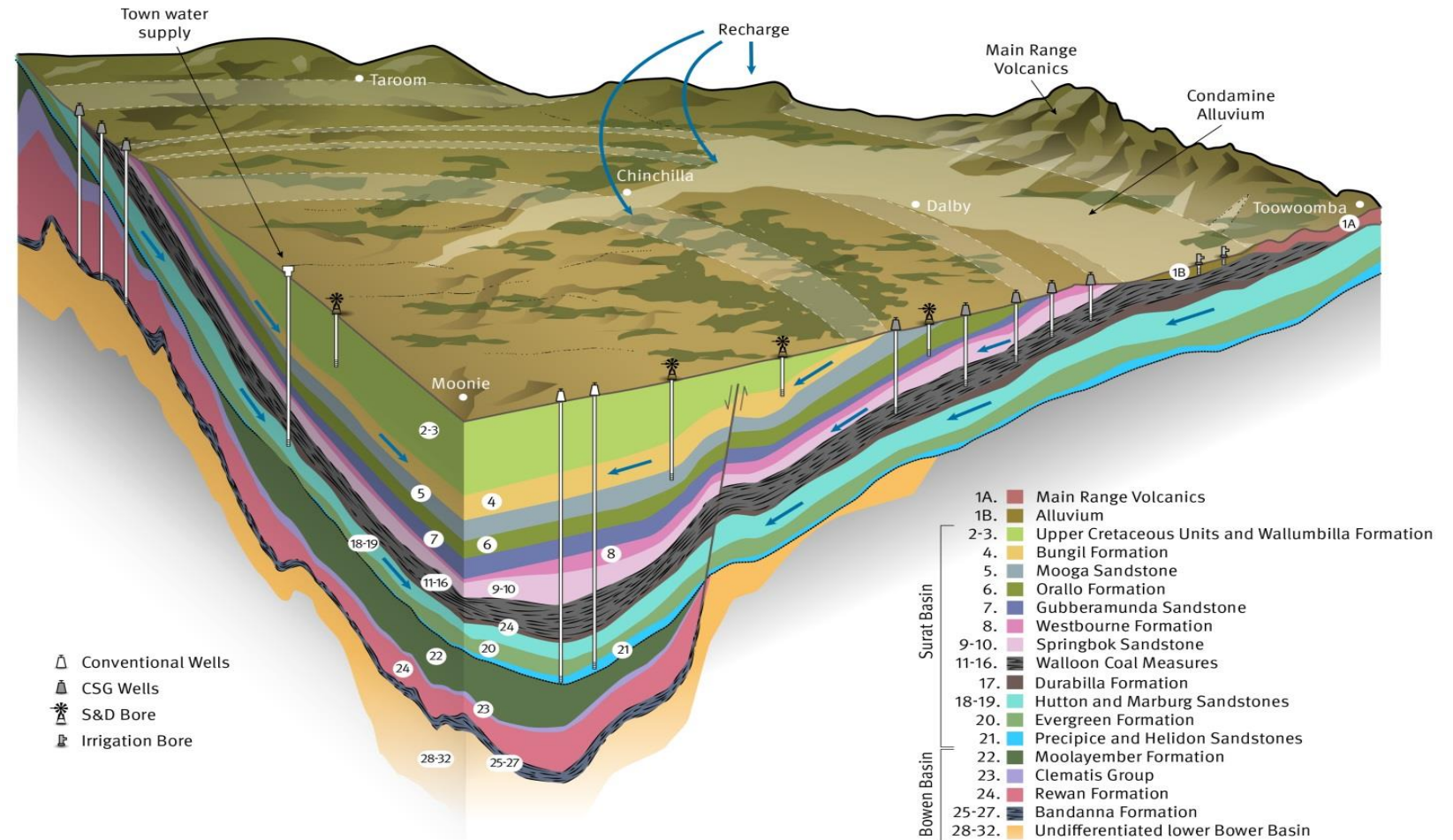
New geological model layering

Used primary sources

- 4800 CSG wells

Model used for:

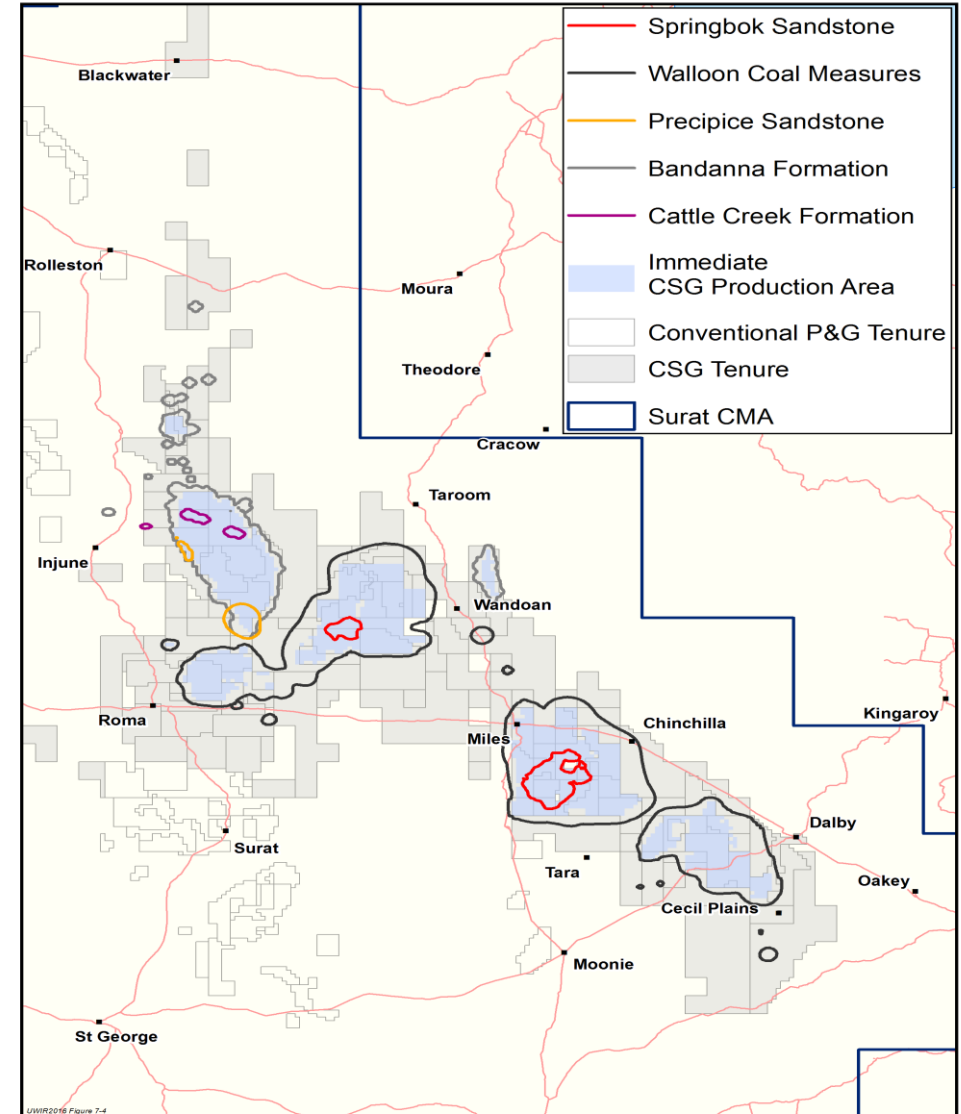
- GW flow model
- gives meaning to data from old water bores
- tool for water managers



Predictions of impact – UWIR 2016

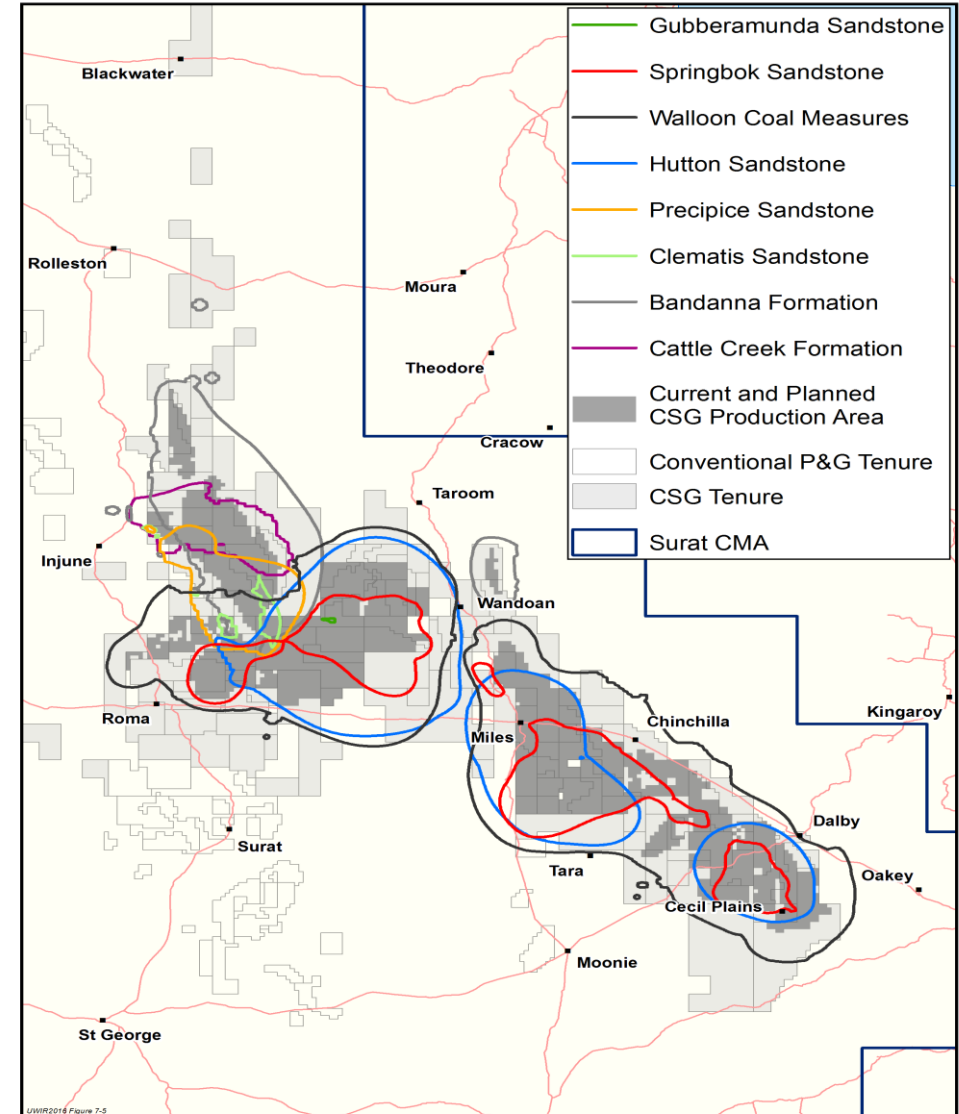
Immediately Affected Area (IAA) – 100 bores

- More than 5m impact within three years
- IAA areas will grow as industry develops
- Final IAA areas = LAA
- IAA bores subset of LAA



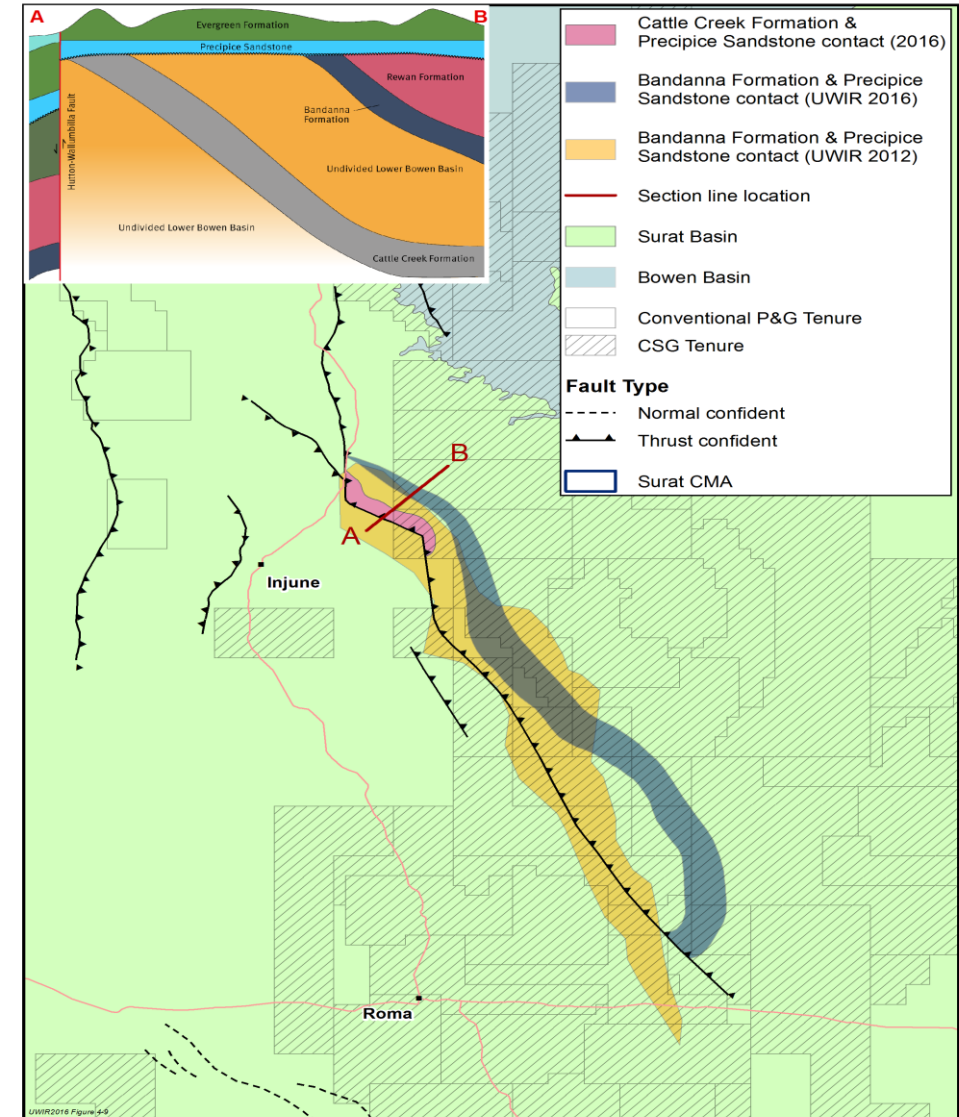
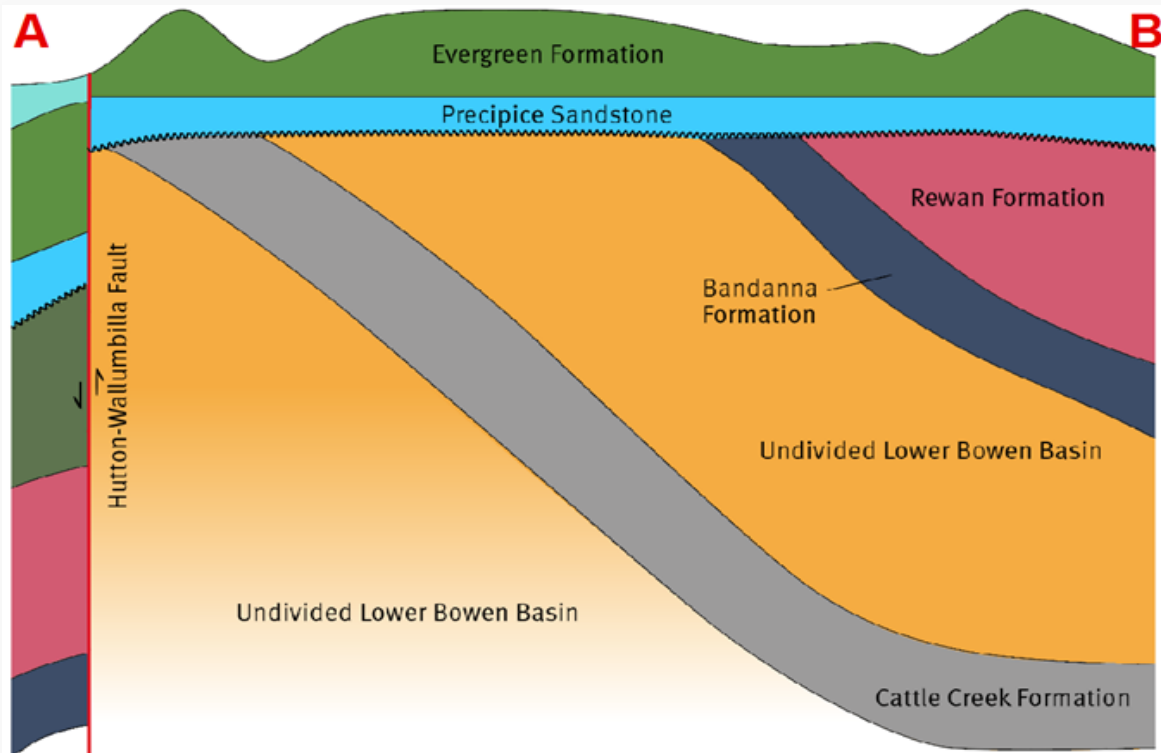
Long-term Affected Area (LAA) – 469 bores

- Overall reduction in LAA areas for Walloon Coal Measures and overlying strata
 - Reflects reduced vertical permeability values and area of planned development
- Increase in Hutton LAA
 - Reflects increased simulated pressure reduction at base of Walloons
- Increase in Precipice LAA
 - Reflects development of Cattle Creek Formation



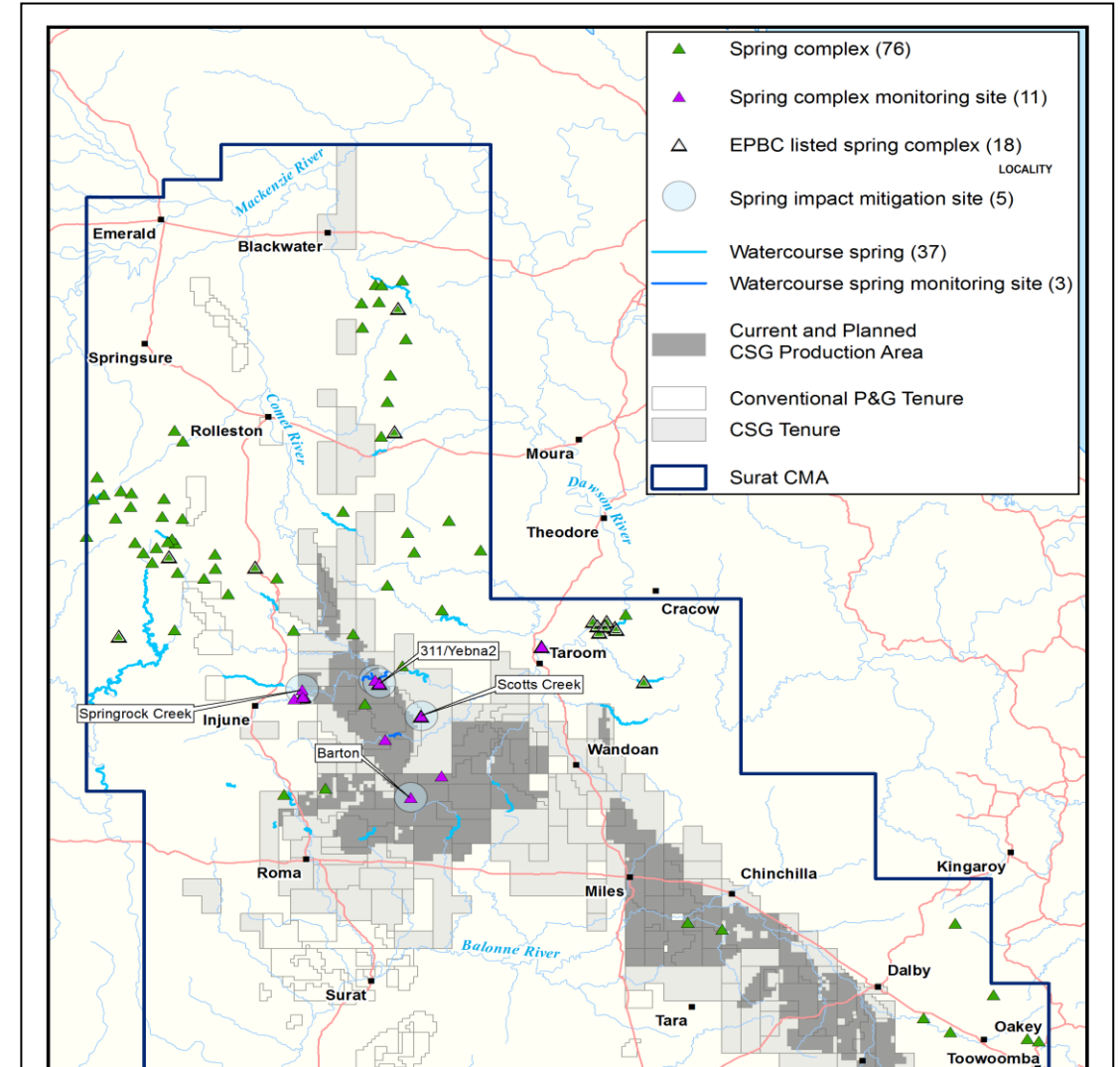
Surat and Bowen basin contact

- Contact between the Bandanna Formation and Precipice Sandstone has been remapped



Springs and rivers

- 0.2 metres impact predicted in source aquifer - **Mitigation sites**
- Reduced from 5 to 4 since UWIR 2012
- Tenure holder to assess local hydrogeological setting and evaluate mitigation options
- 50 spring monitoring sites



Summary

- A new geological and groundwater flow model has been developed
- The revised UWIR (2016) includes
 - New predictions of impact on bores and springs
 - 675 groundwater pressure and water quality monitoring points
 - 50 spring monitoring points
- Next UWIR required by mid 2019
- Future work program

Office of Groundwater Impact Assessment

<https://www.dnrm.qld.gov.au/ogia>

Steven Flook

Principal Hydrogeologist

61 Mary Street, Brisbane

3199 7310

steven.flook@dnrm.qld.gov.au