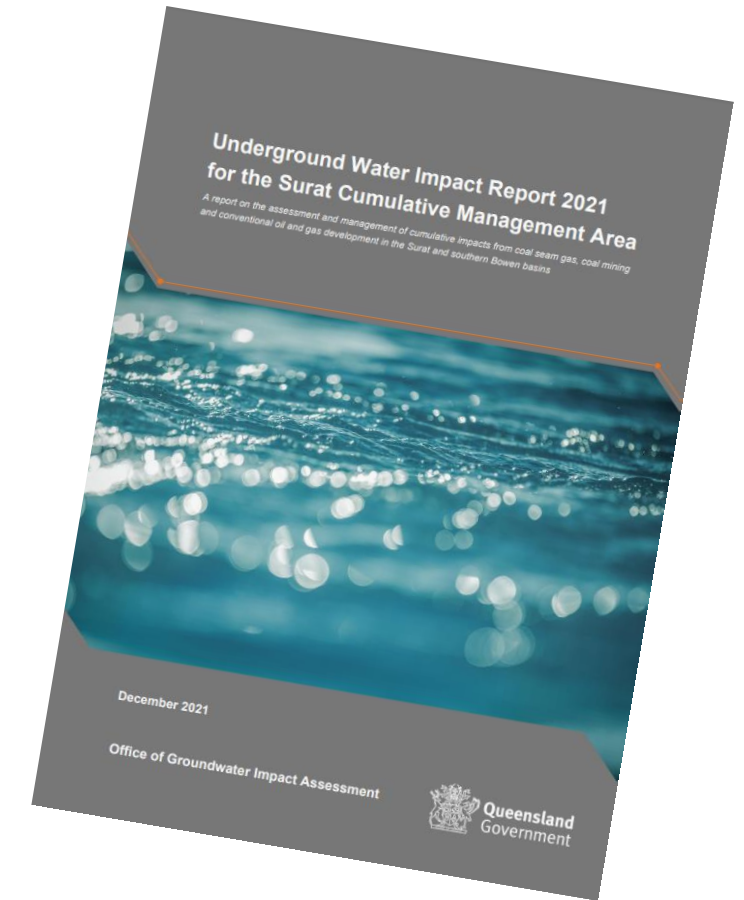


In this presentation

- Office of Groundwater Impact Assessment (OGIA)
- Key findings - *Underground Water Impact Report 2021*
- Key challenges - building groundwater knowledge
- Transferable outcomes and opportunities



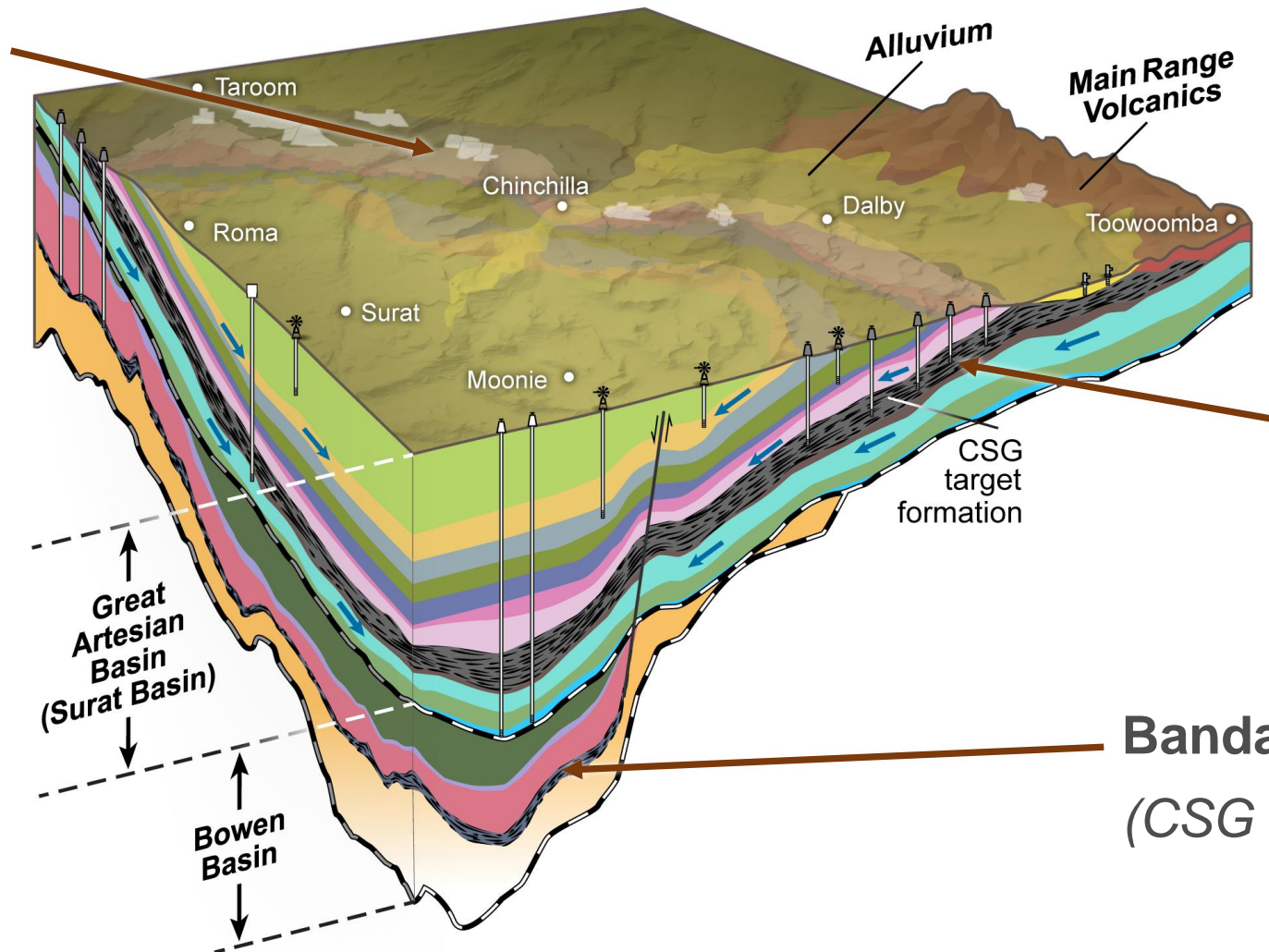
Cumulative management framework

- Where there are overlapping impacts – the State may declare a '*cumulative management area*' (**CMA**)
- In a CMA the independent **Office of Groundwater Impact Assessment (OGIA)** undertakes assessment and management of impacts – CSG and coal mining.
- Cumulative impact **assessment, management** of impacts and **obligations** on tenure holders



CSG and coal target formations

Coal mines

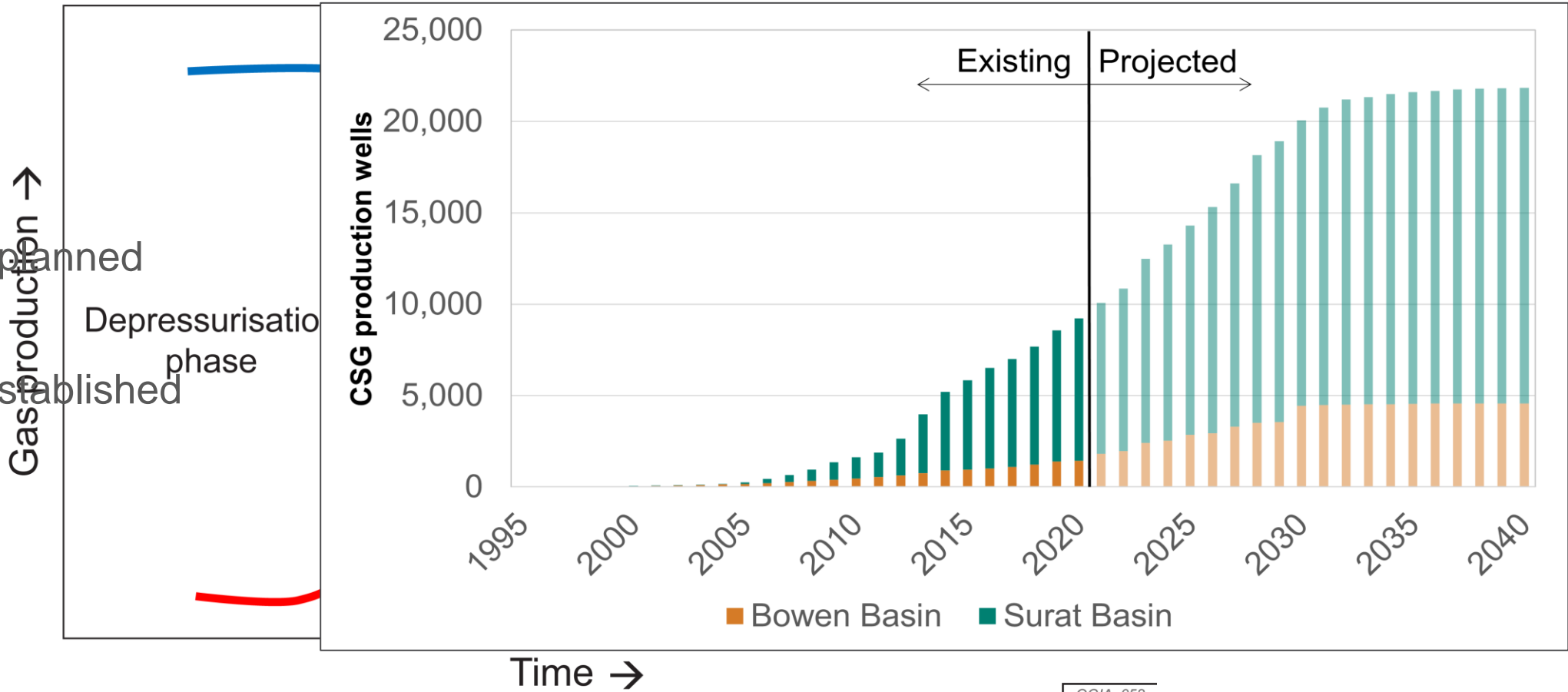


Walloon Coal Measures
(CSG and Coal Target)

Bandanna Formation
(CSG Target)

Existing and planned CSG production

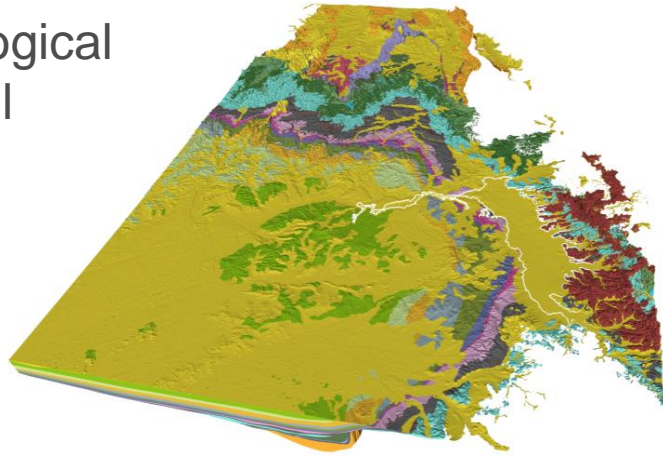
- 22,000 wells planned
- 8,600 wells established



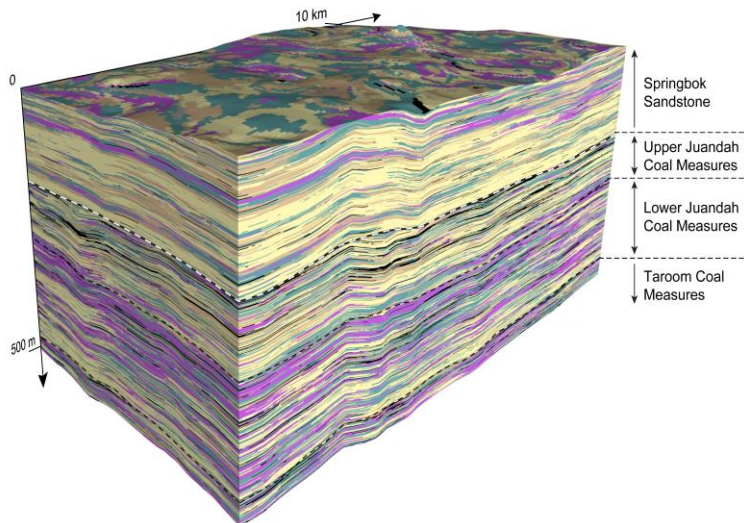
OGIA_052

How are predictions made?

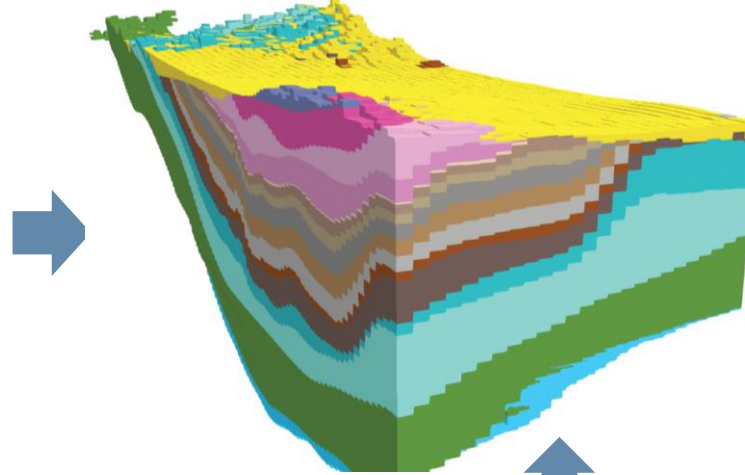
Geological model



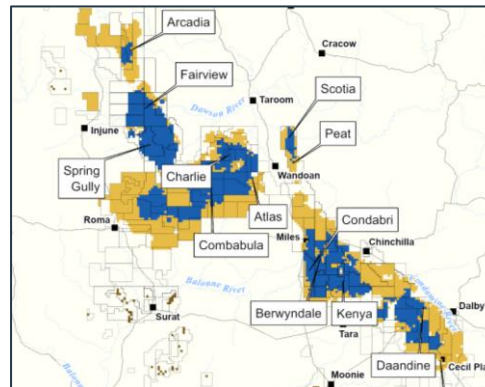
Conceptualisation (impact pathways)



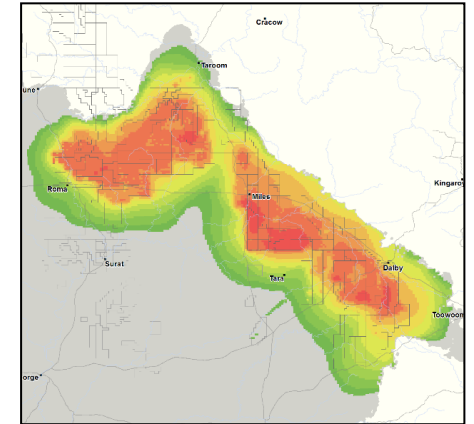
Groundwater model



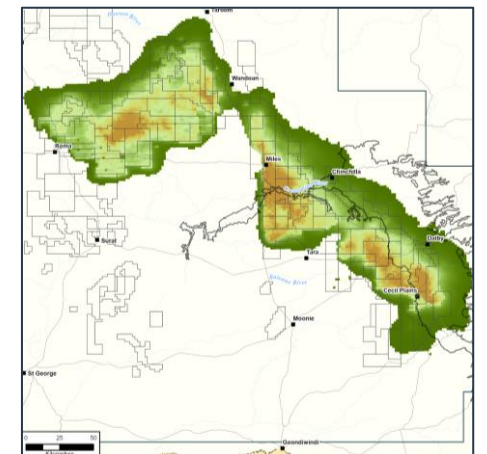
Development scenario



Drawdown predictions



Subsidence predictions



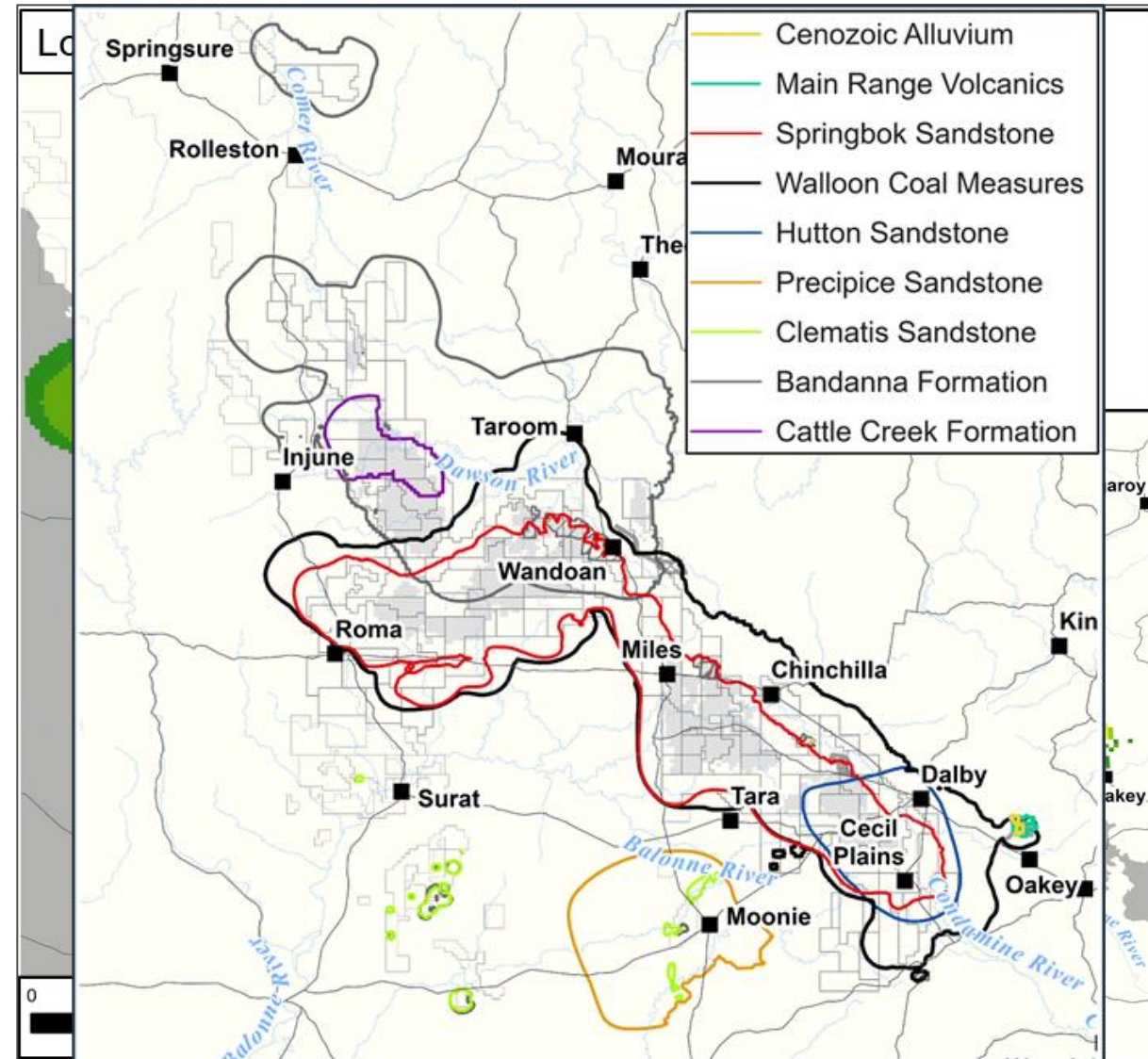
Impacted bores

Long term

- 702 water supply bores (LAA bores)
 - Coal mining integration
 - New bore information
 - Changes in production profile
 - Includes 186 decommissioned bores

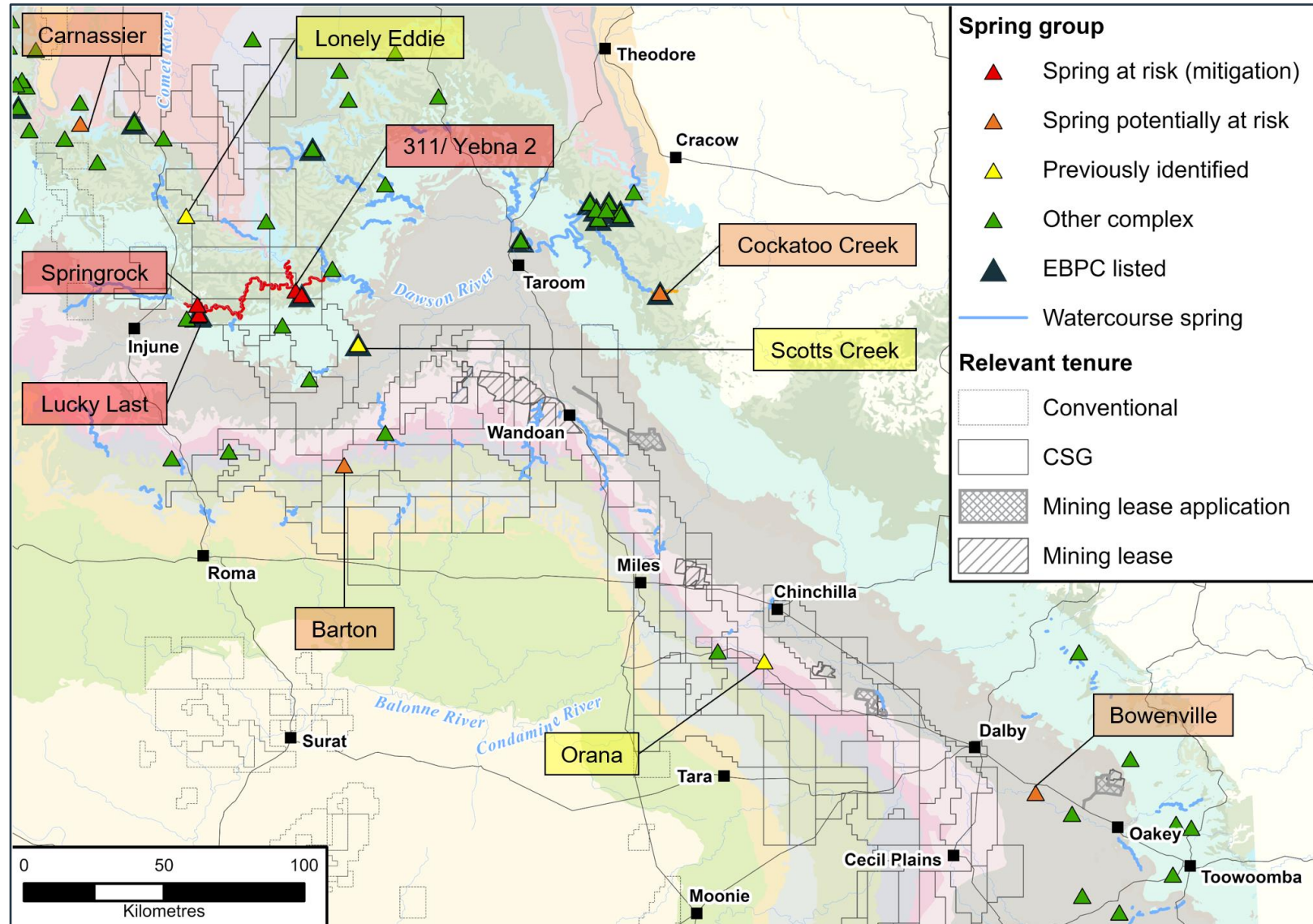
Short term

- 108 in the next three years (IAA bores)



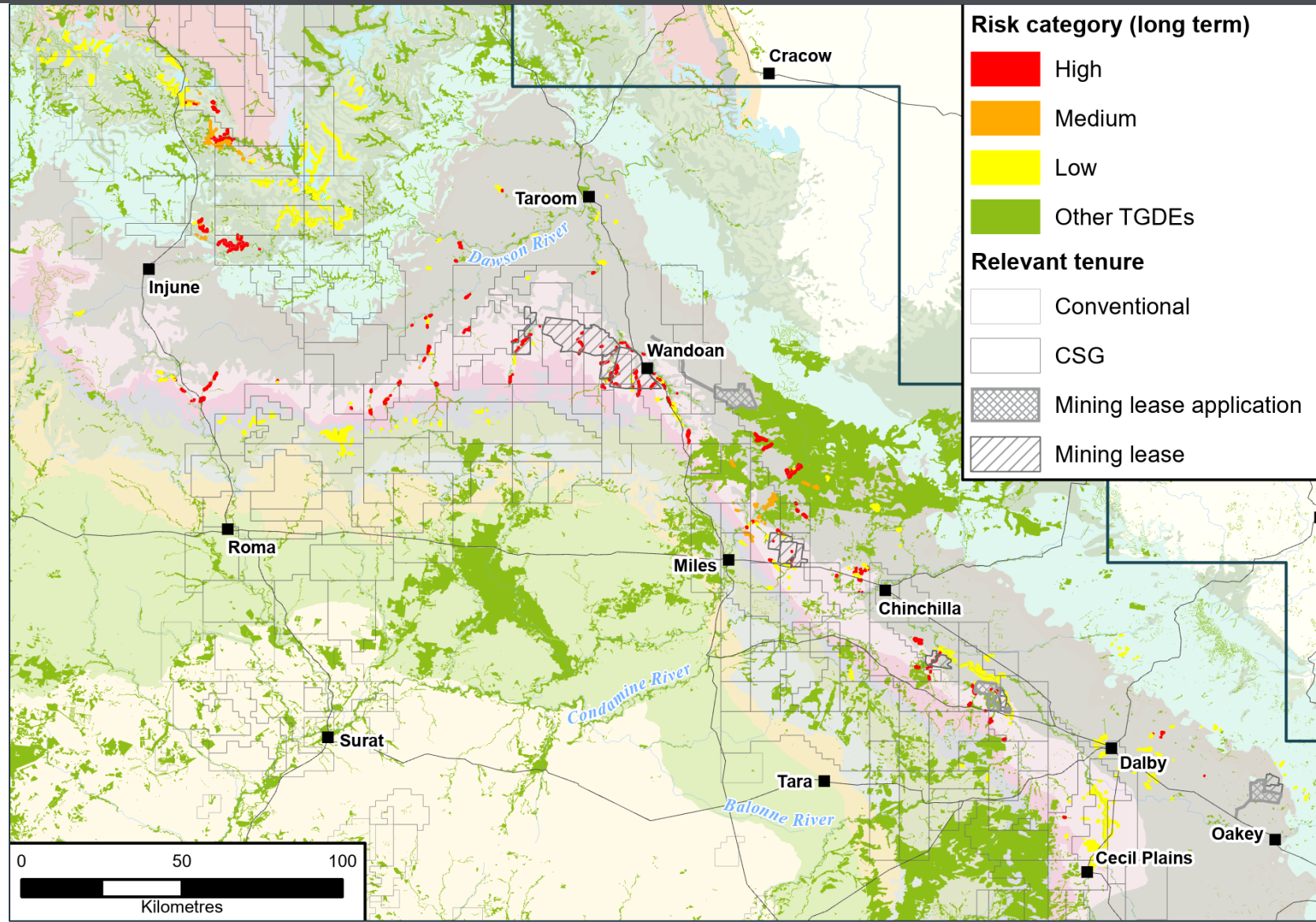
Springs

- 7 spring groups predicted to be impacted (> 0.2 m)
- Action required at 3 groups
- Existing impact mitigation plan at those sites (Santos)

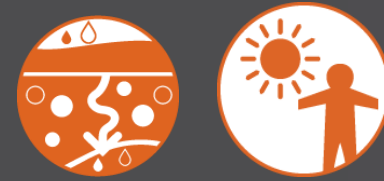


Terrestrial GDEs

- Risk assessment of mapped TGDEs
- Next steps – verify groundwater dependency



Challenges - GDEs

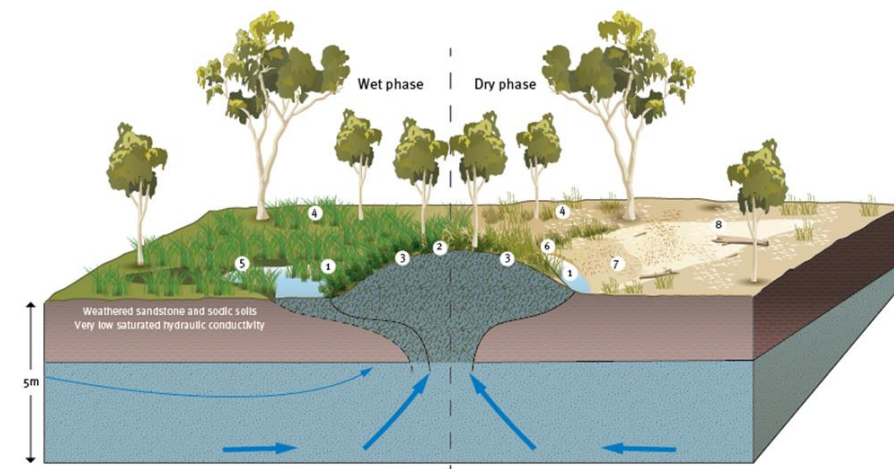


Key guiding questions for GDEs

- Where are the GDEs?
- What is their connection to groundwater?
- What is their likely response to change?

Springs

- Ecohydrological surveys, identify source aquifer and monitor
- Develop conceptual models of spring function and response
- Develop and implement risk assessment
- This cycle - indigenous knowledge



Challenges - GDEs

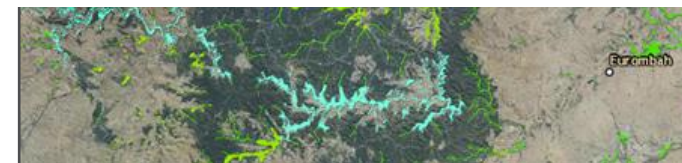
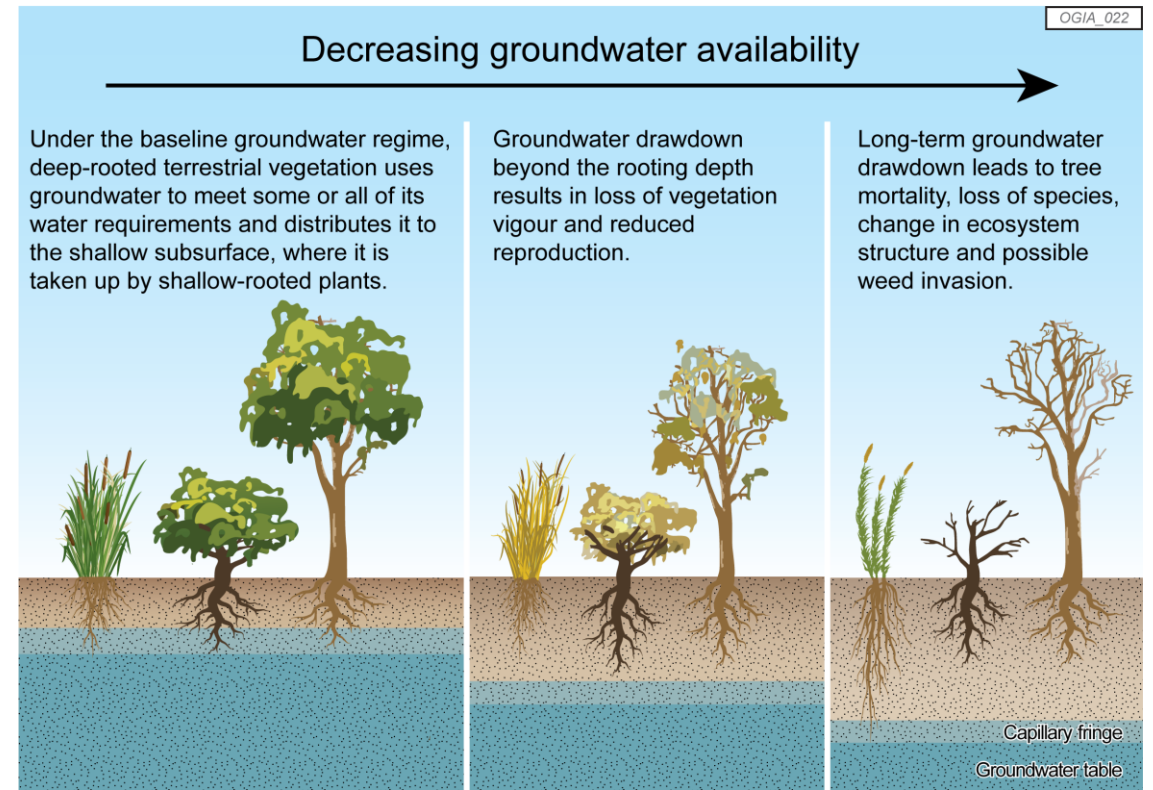
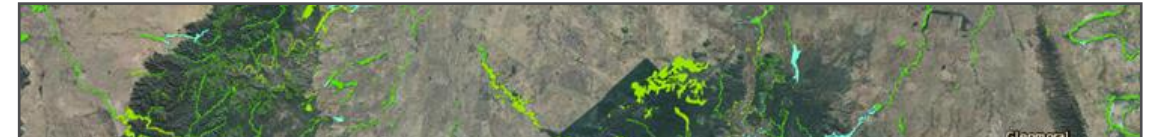


Key guiding questions for GDEs

- Where are the GDEs?
- What is their connection to groundwater?
- What is their likely response to change?

Terrestrial GDEs

- Mapped potential TGDEs with Qld Herbarium
- Conceptualisation of likely response
- Develop and implement risk assessment
- Research this cycle - validation



- 81-100 Derived GDE - Low Confidence
- 01-80 Derived GDE - High Confidence
- 01-80 Derived GDE - Moderate Confidence
- 01-80 Derived GDE - Low Confidence

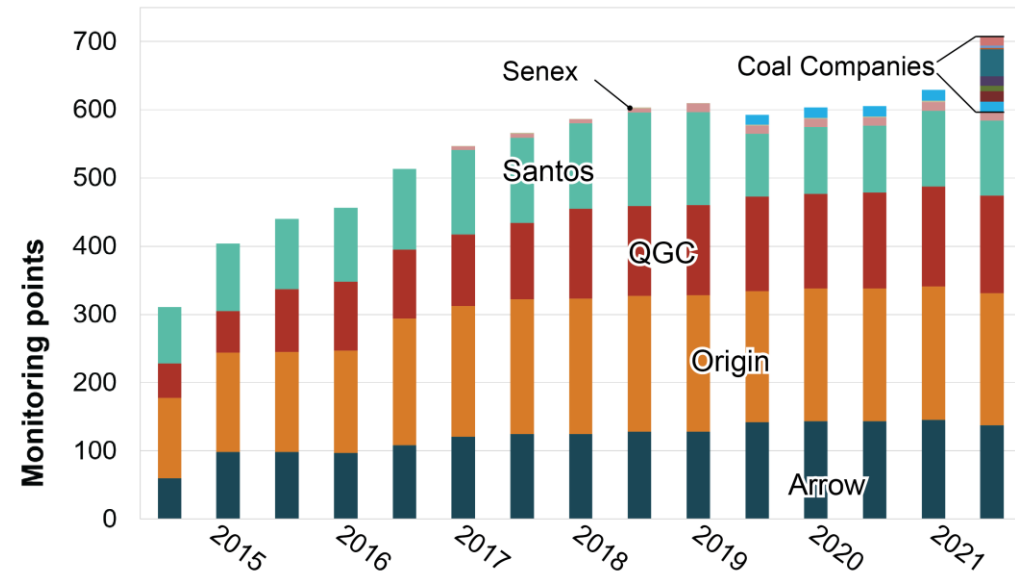
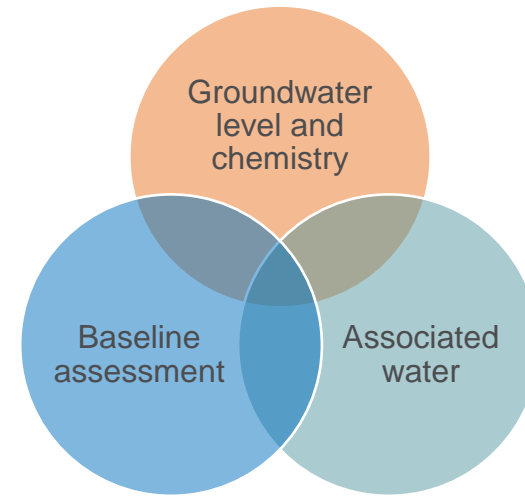
Challenges – groundwater level and chemistry

Initially limited monitoring in CSG development areas (2011)

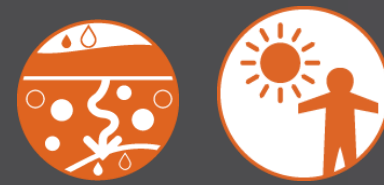
- Establish UWIR water monitoring strategy
- Growth of UWIR network to more than 700 monitoring points

Complementary monitoring

- RDMW monitoring
- Citizen science - Groundwater Net

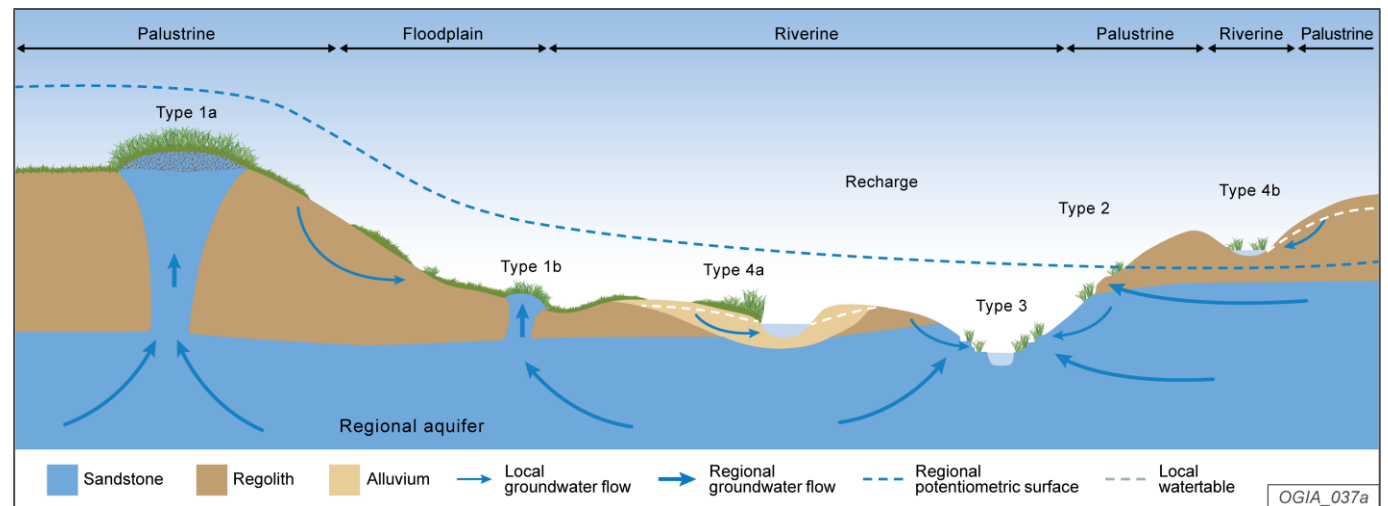
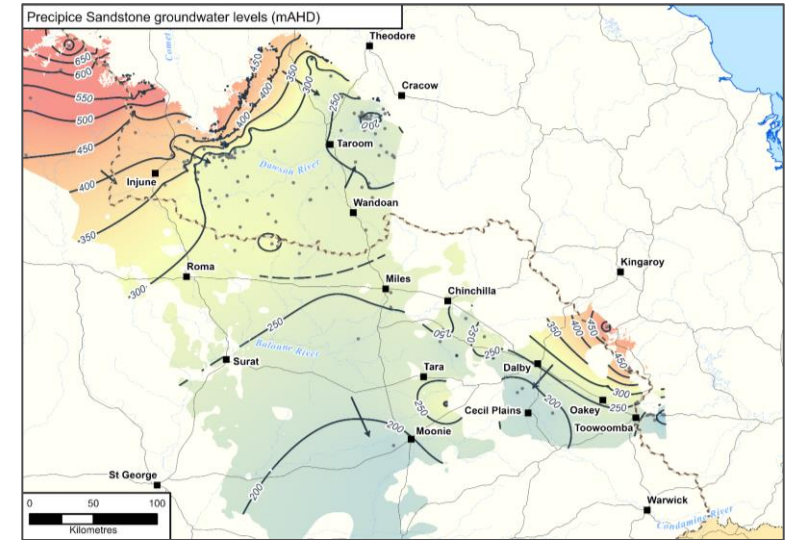
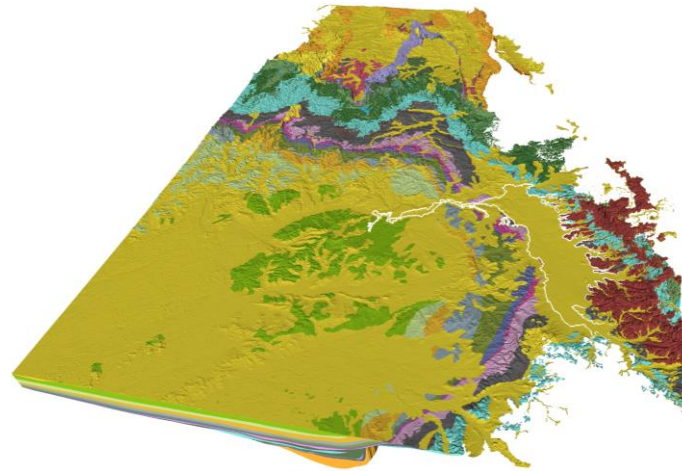


Opportunities



Products (examples)

- Bore and aquifer attribution
- Geological model
- Aquifer characterisation
- Flow directions
- Water use estimates
- Spring conceptualisation
- GDE mapping

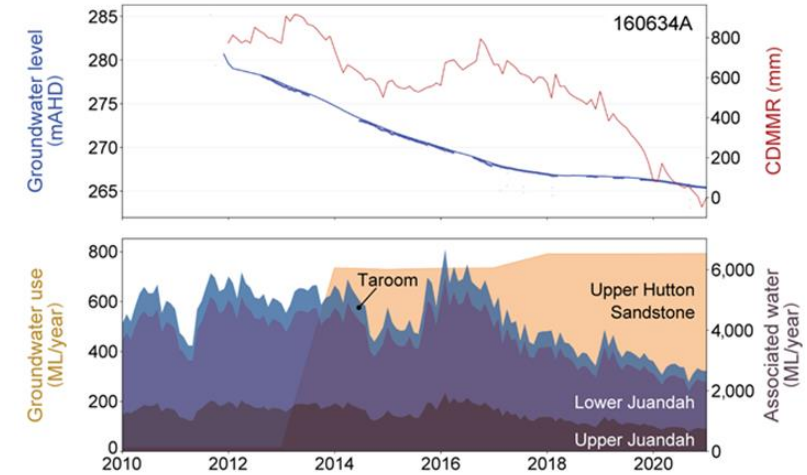
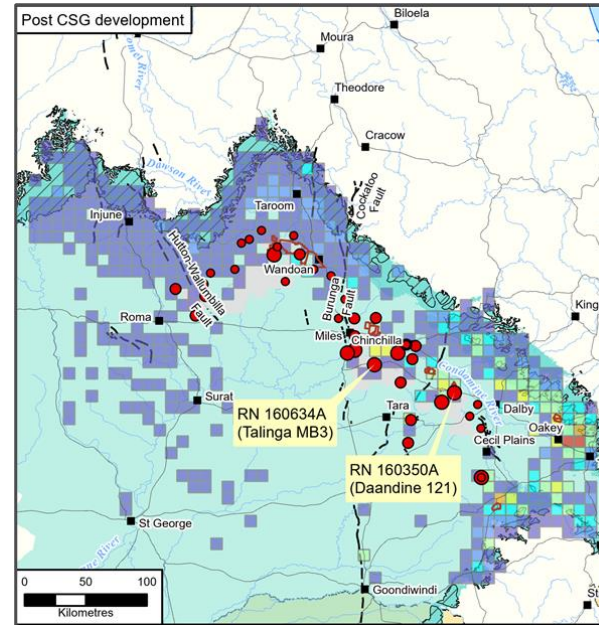


Opportunities

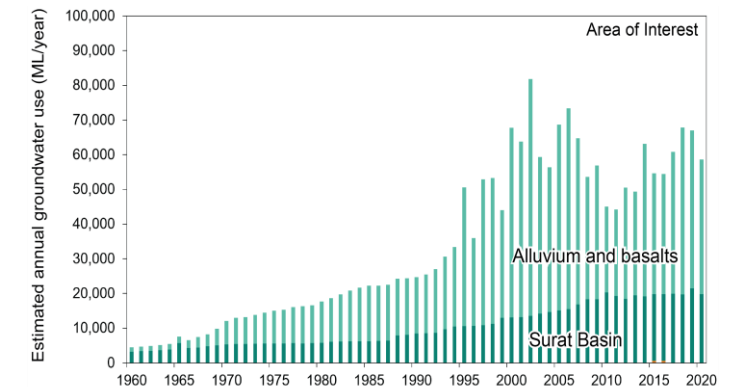


Methods / approaches (examples)

- Analysis of groundwater trends
- GDE risk assessments
- Estimating water use
- Citizen science



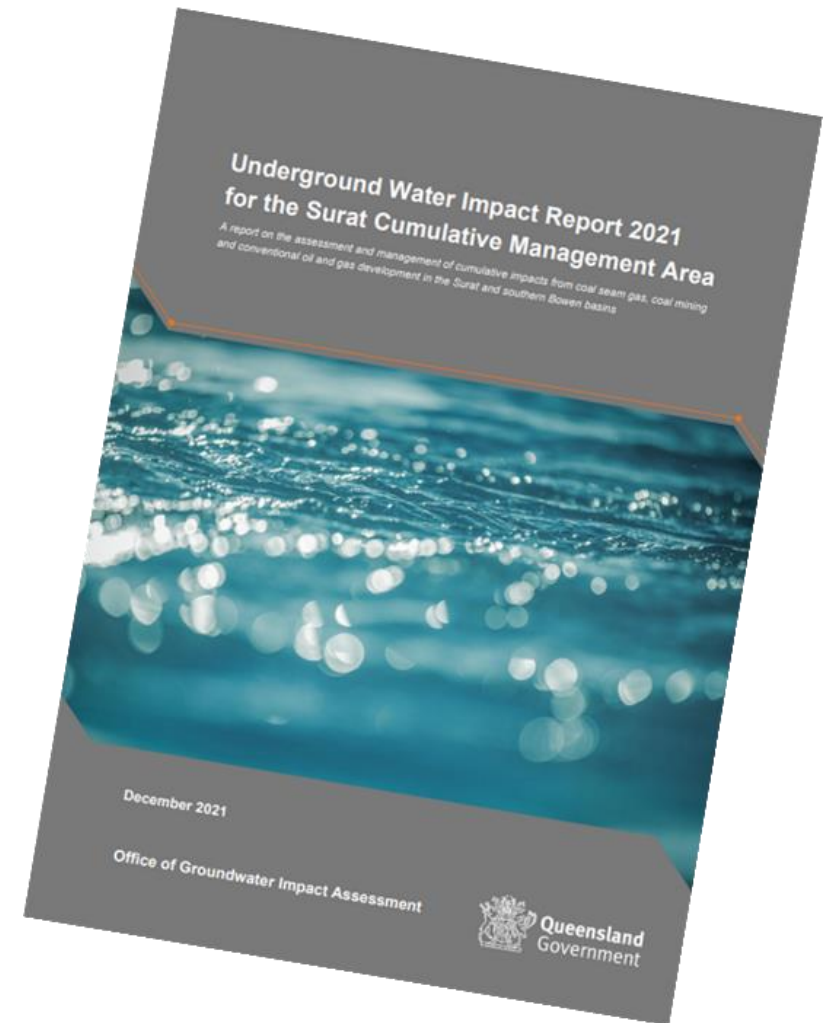
			Consequence				
			0 - 3	4 - 7	8 - 9	10 - 12	13 - 15
Likelihood	1	Rare	Very low (1)	Very low (1)	Low (2)	Low (2)	Low (2)
	2	Unlikely	Very low (1)	Low (2)	Moderate (3)	Moderate (3)	Moderate (3)
	3 - 4	Possible	Low (2)	Low (2)	Moderate (3)	High (4)	High (4)
	5 - 7	Likely	Low (2)	Moderate (3)	High (4)	High (4)	Very high (5)
	8 - 10	Highly likely	Low (2)	Moderate (3)	High (4)	Very high (5)	Very high (5)




Summary



- Overview of OGIA
- Key findings from the UWIR 2021
 - Water bores, springs and terrestrial GDEs
 - Groundwater monitoring
- Key challenges - building groundwater knowledge
- Transferable outcomes and opportunities



Thank you

 07 3199 7321

 ogia@rdmw.qld.gov.au

 www.business.qld.gov.au/ogia

 PO Box 15216, City East Qld 4002



Queensland
Government