

# Australia's New Earth Resource the Asia Connection

## CCS Technology for the 2020s



**Dr Richard Aldous**

*Chief Executive*

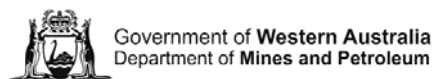
Cooperative Research Centre  
for Greenhouse Gas  
Technologies (CO2CRC)

CRCA SYMPOSIUM PERTH  
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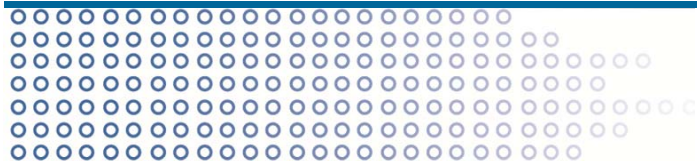
# CO2CRC Participants



**Supporting Partners:** The Global CCS Institute | The University of Queensland | Process Group | Lawrence Berkeley National Laboratory  
CANSYD Australia | Government of South Australia | Charles Darwin University | Simon Fraser University



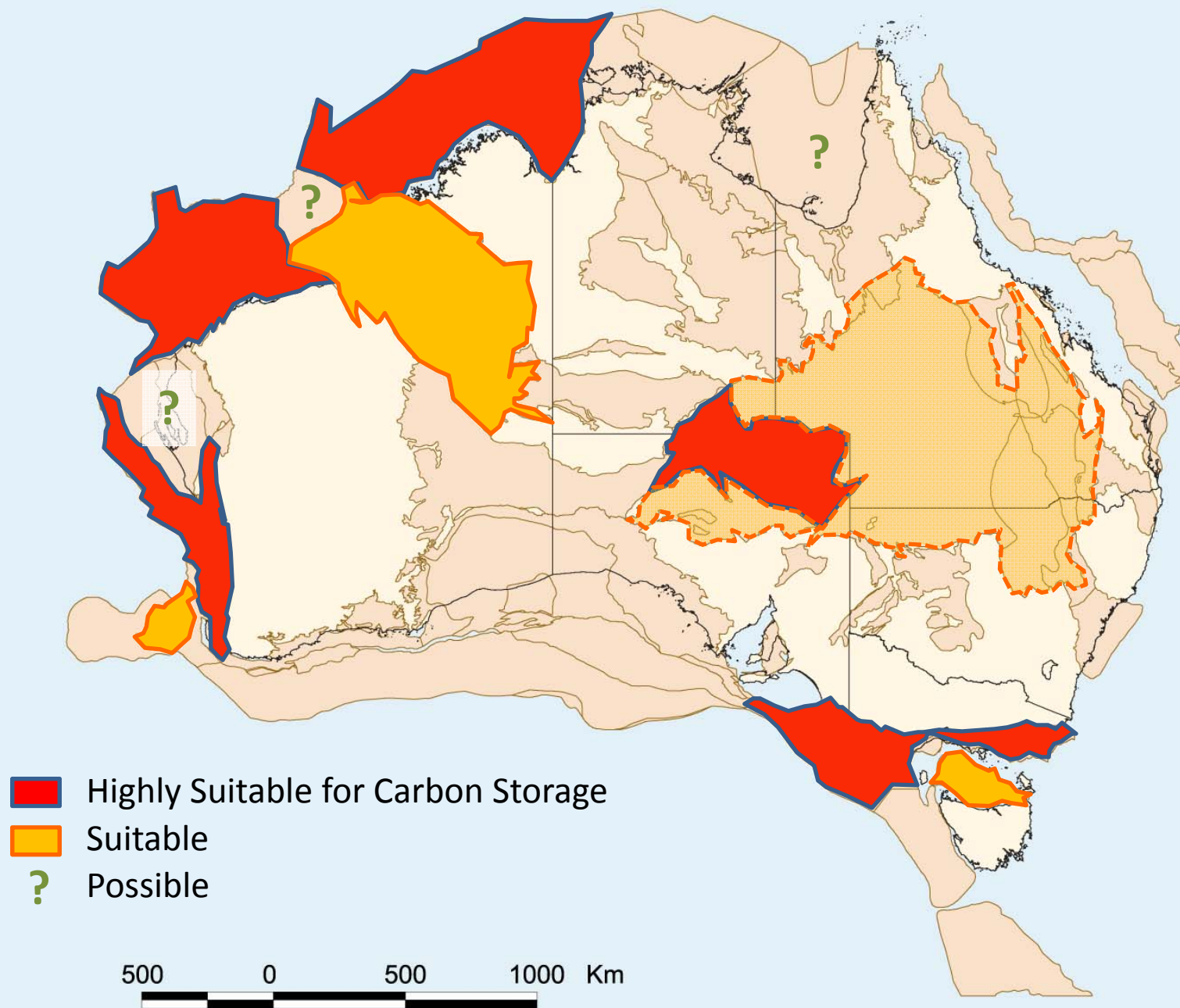
# Australia's New Earth Resource ??





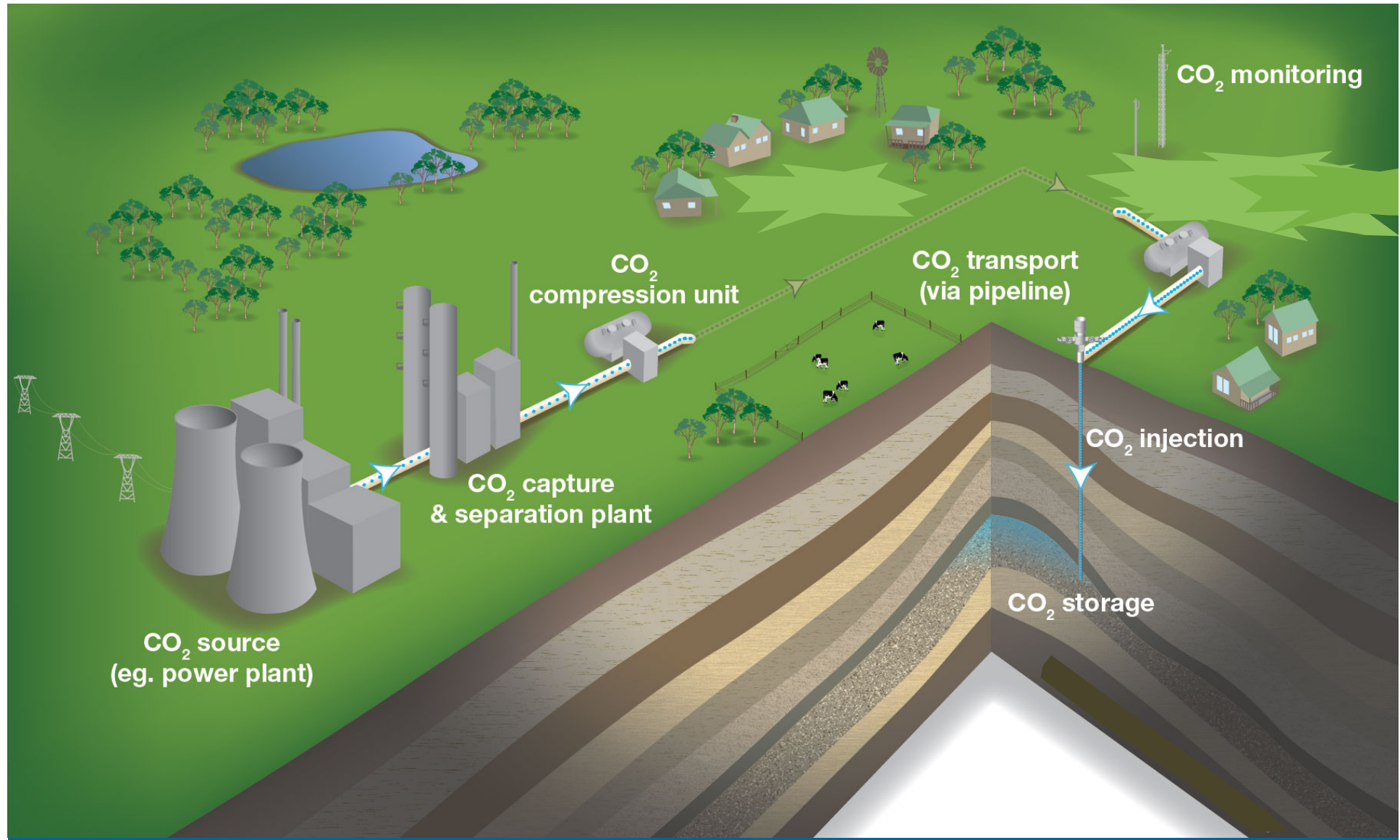


# *Sedimentary Basins Around Australia*



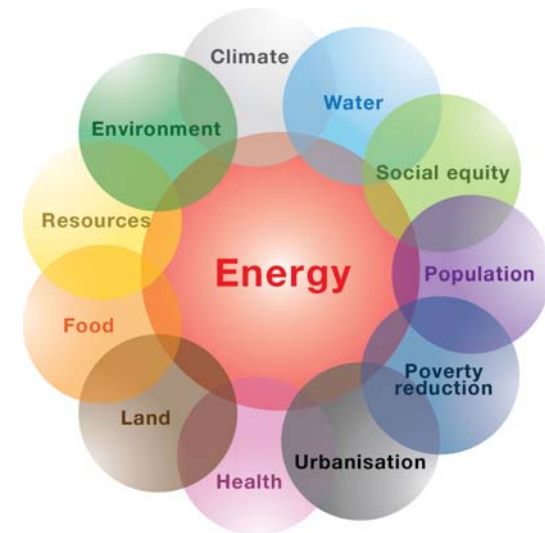


# The Carbon Capture and Storage

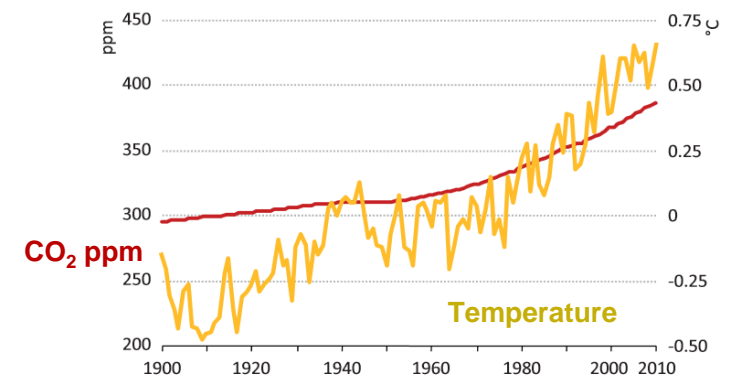


# CCS is Inevitable

- Fossil fuel consumption will continue to grow
- Climate change
  - science and action
- CCS is the only technology that can deal with emissions from fossil fuels
- CCS a vital part of the lowest cost pathway (IEA 2013)



World Av. CO<sub>2</sub> & Temperature



Sources: Temperature data are from NASA (2013); CO<sub>2</sub> concentration data from NOAA Earth System Research Laboratory.

# CCS technology:

*“Available & being deployed”*

- 65 projects in production, construction or planning
- Australia has played a significant role in the technology
  - CO2CRC Otway project
  - Gorgon

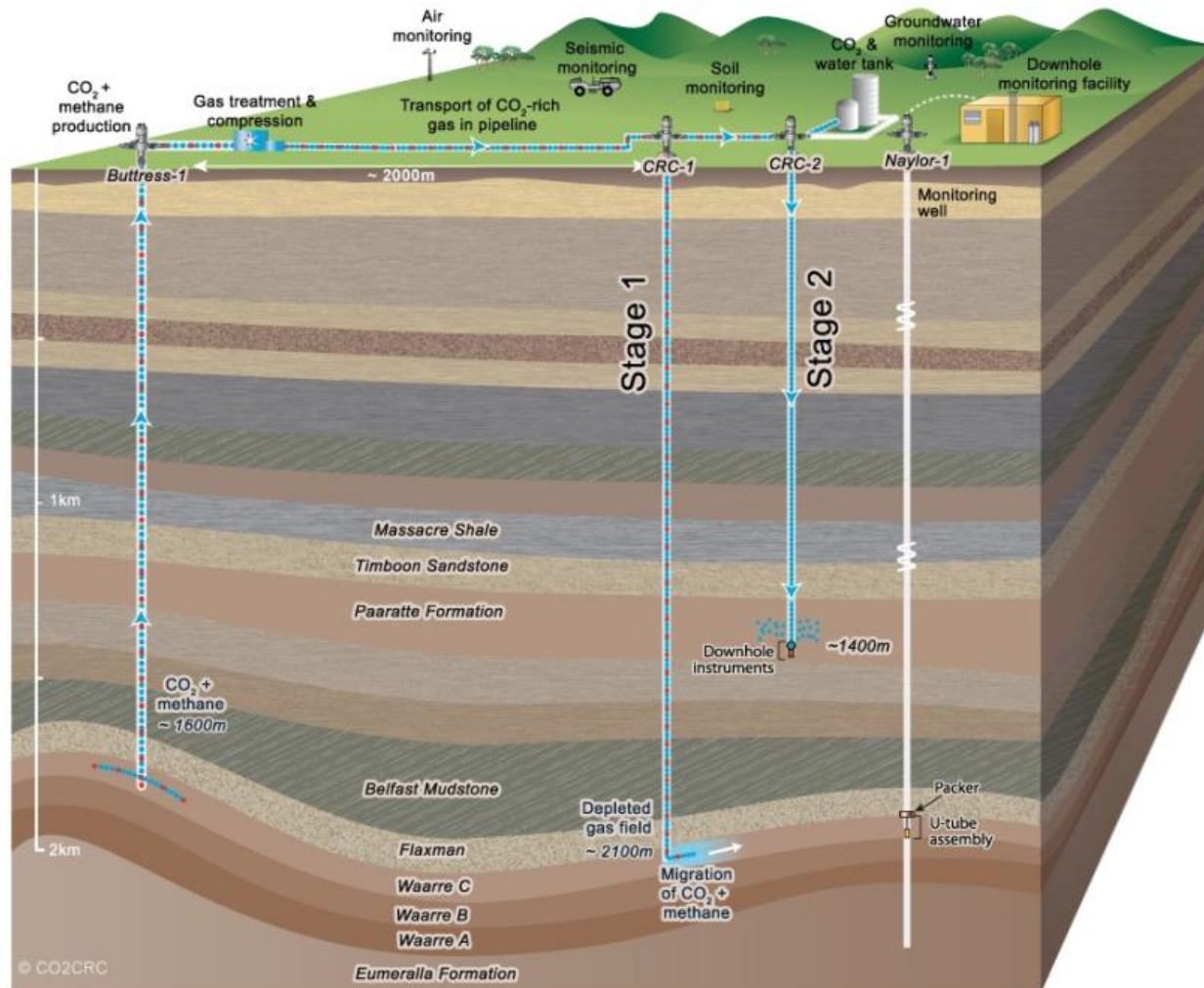


- delaying CCS makes the solution more costly



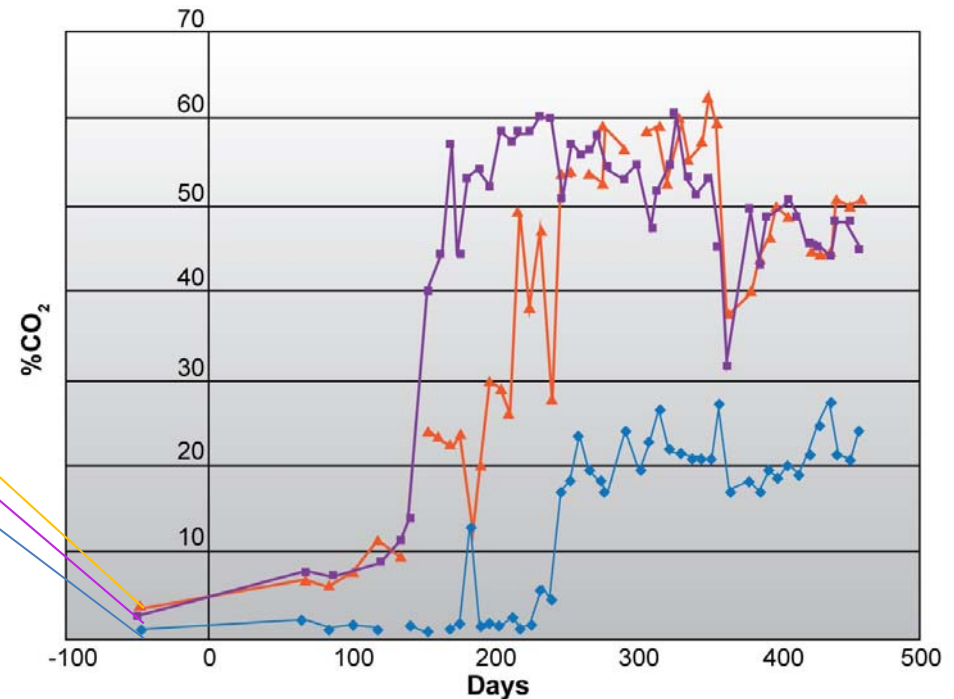
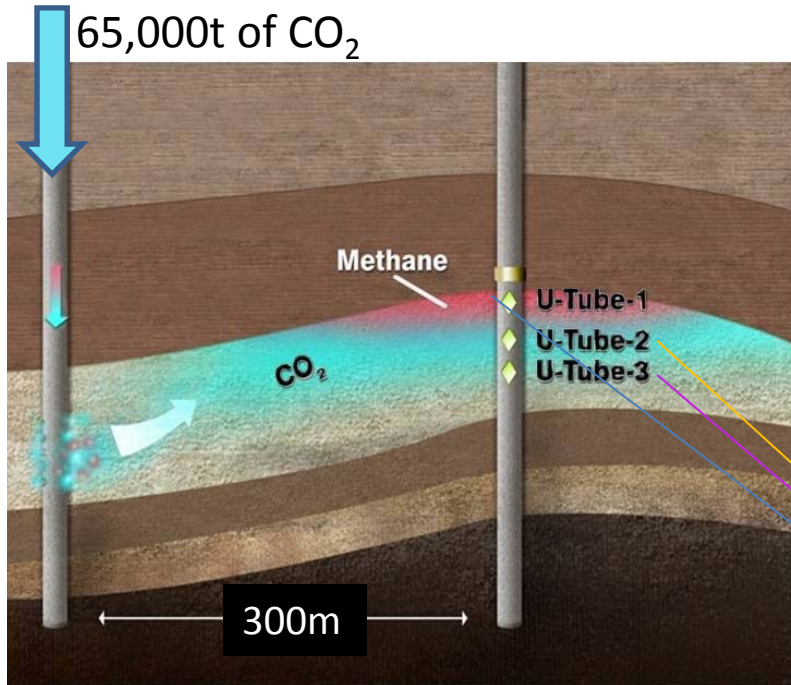
# Otway Project – Victoria

- One of the top storage R&D facilities in the world
  - 400kt reserve of CO<sub>2</sub>, highly characterised site
  - Good relationship with community and regulators



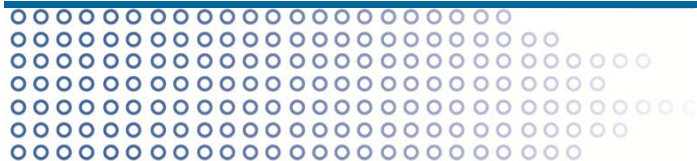
- Attracting researchers, equipment and funding from around the world
- Strong links with S Korea, EU, Canada and USA

# Injection 2km down - sampling of CO<sub>2</sub> plume



Worlds firsts :

- 1) Demonstration of safe storage in a depleted gas field (PNAS)
- 2) Direct in-situ sampling of rock fluids 2kms underground
- 3) Single well residual saturation test



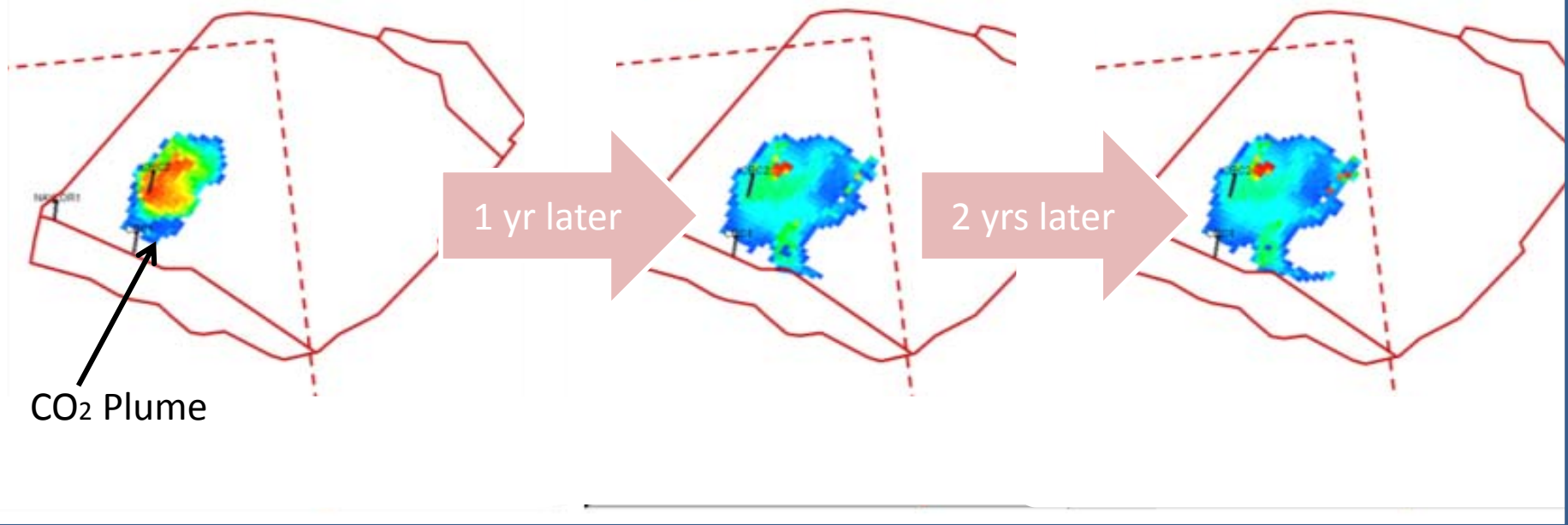


# Otway - Injecting 15kt CO<sub>2</sub> into a horizontal saline aquifer

Time lapse seismic surveys to observe :

- 1) CO<sub>2</sub> plume stop and stabilise
- 2) Minimum detectable CO<sub>2</sub> plume size

Plan view 1.5 km subsurface



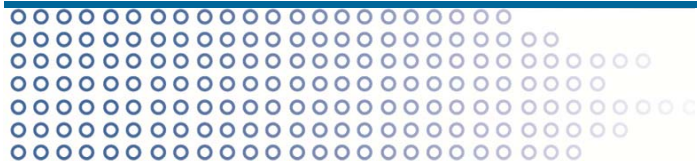
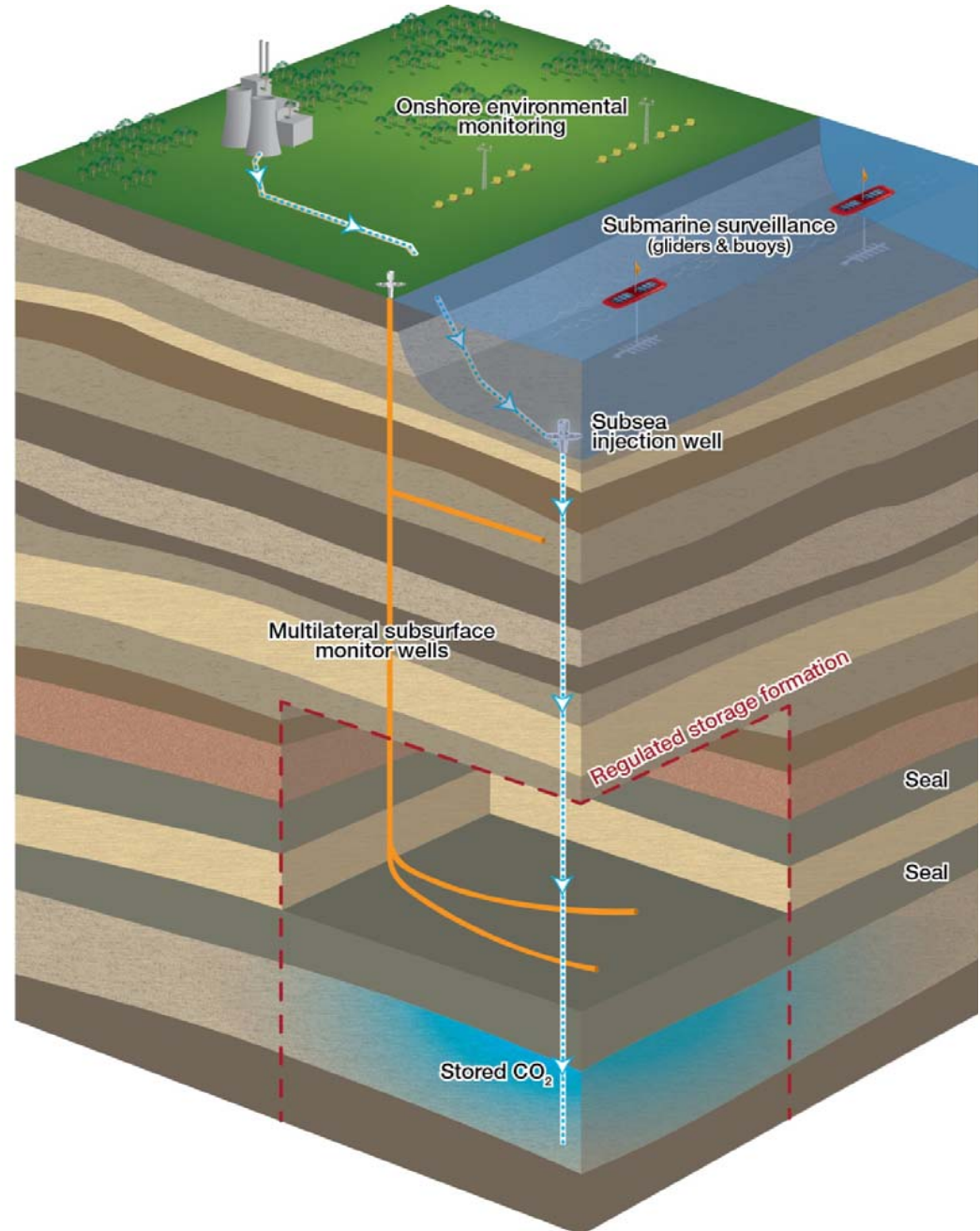
# CO2CRC R&D associated with offshore CCS

## More efficient CO<sub>2</sub> monitoring

- Offshore marine monitoring
- Horizontal monitoring wells
- Seismic monitoring

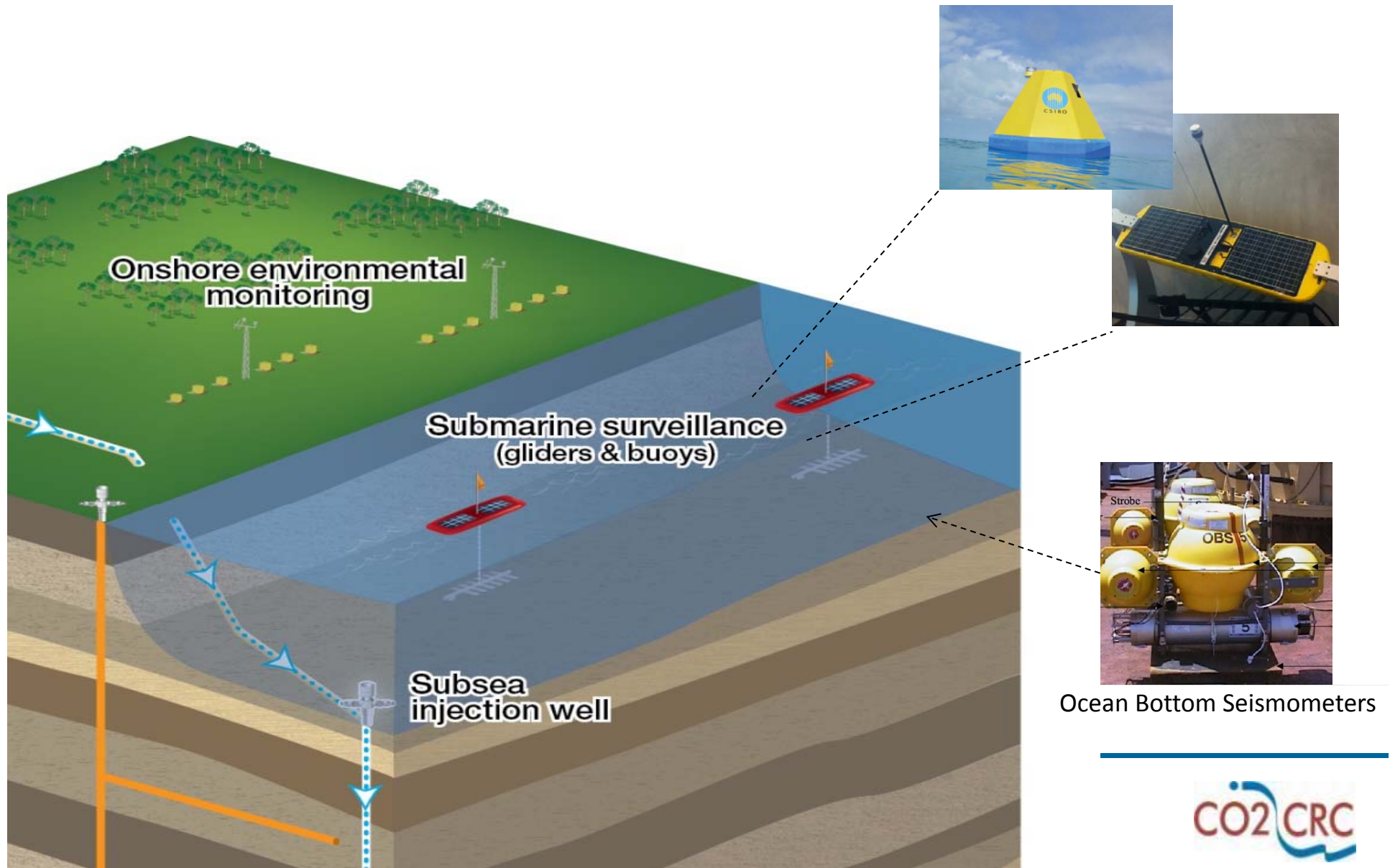
## More efficient use of resource

## More efficient separation of reservoir CO<sub>2</sub> offshore



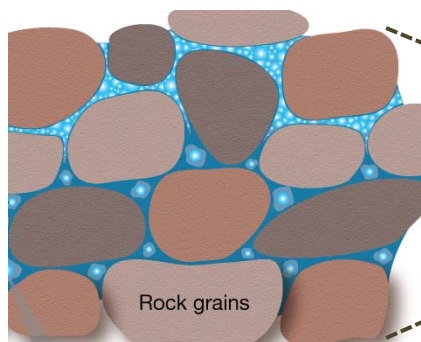
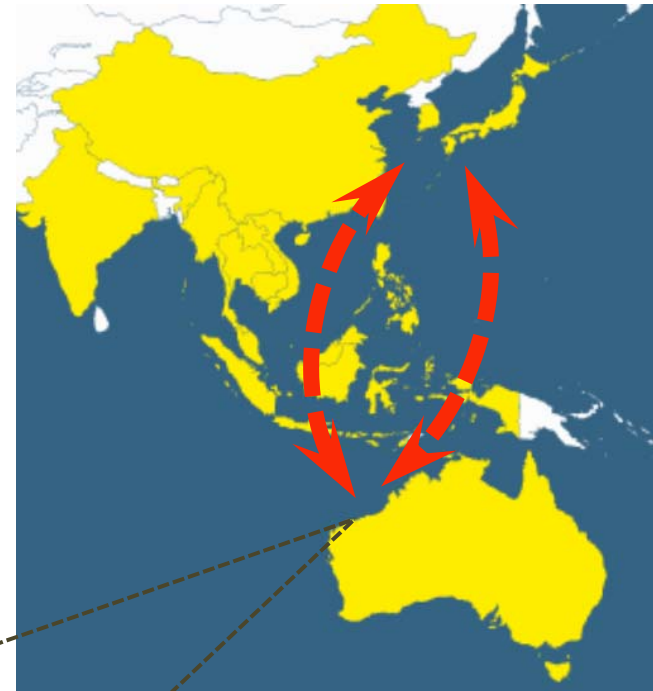


# Offshore Storage – monitoring the water column and ocean floor

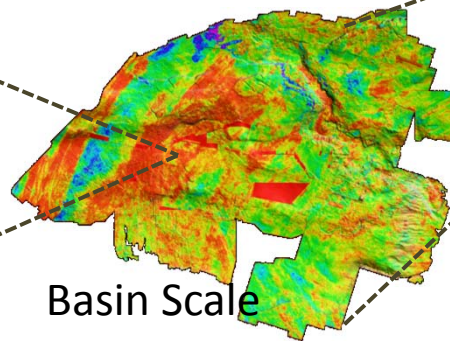


# A new “Earth Resource” for Australia

- 1980 - NW Shelf gas assets useless – now a multi billion dollar industry
- Asia has CO<sub>2</sub> intense economies
- Dual LNG/ CO<sub>2</sub> ships - backload CO<sub>2</sub>
- The global CCS Industry will create a new national resource :
  - Pore space for CO<sub>2</sub> storage



Microscopic



Basin Scale





# CO2CRC and its participants

want to ensure that Australia has the technology ready to use the pore space safely and efficiently – technology & policy links to Asia essential

