State of Play of CCS in South Australia

South Australian Regulatory Framework

Moomba CCS Project

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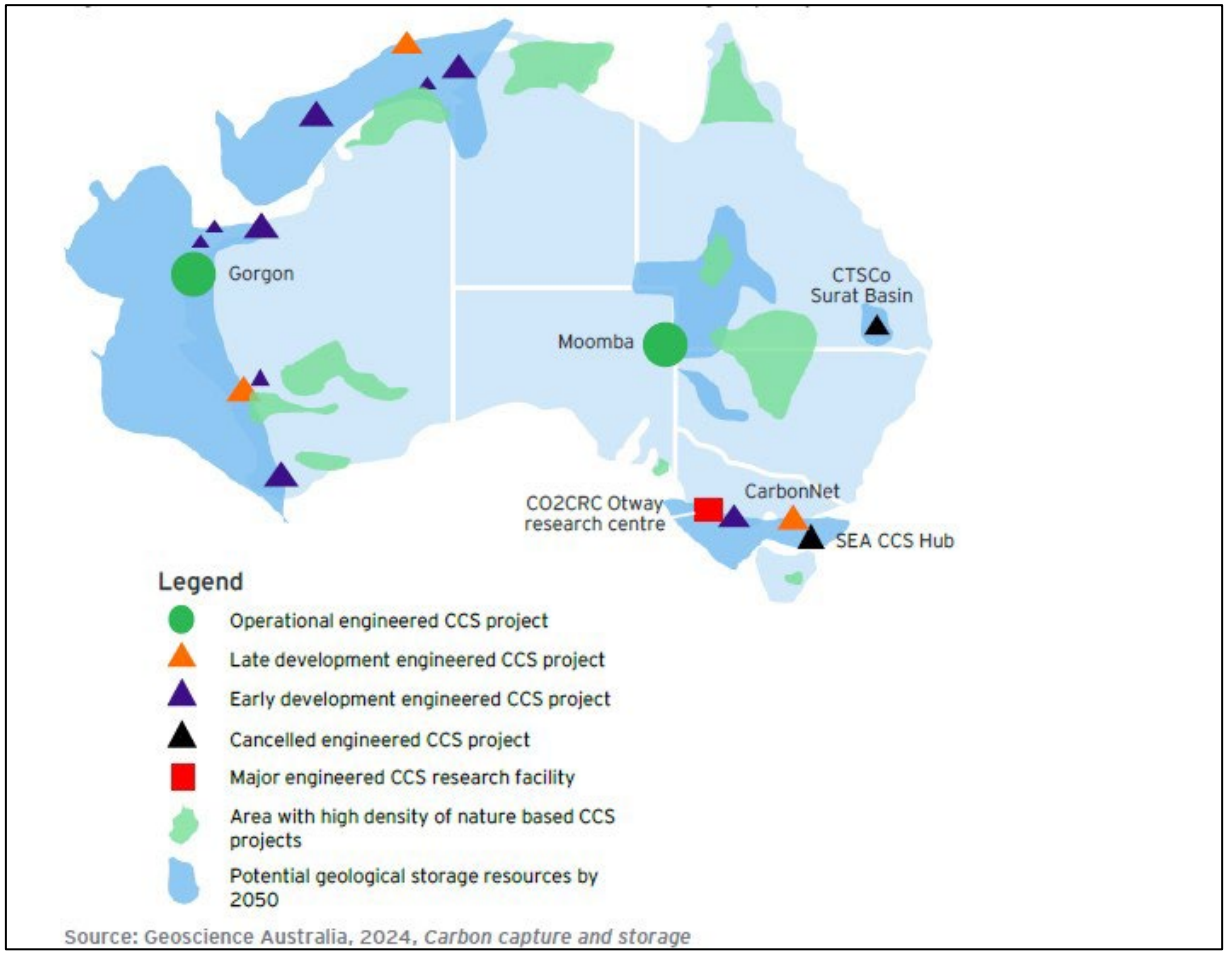
ENERGY RESOURCES SUMMIT

Content

- Status of CCS interest in Australia
- Background on CCS legislation in Australia;
- Moomba CCS project regulated under such legislation;
- Where to from here with commercial CCS deployment.

CCS Operations in Australia



Source: Geoscience Australia, 2024, *Carbon capture and storage*

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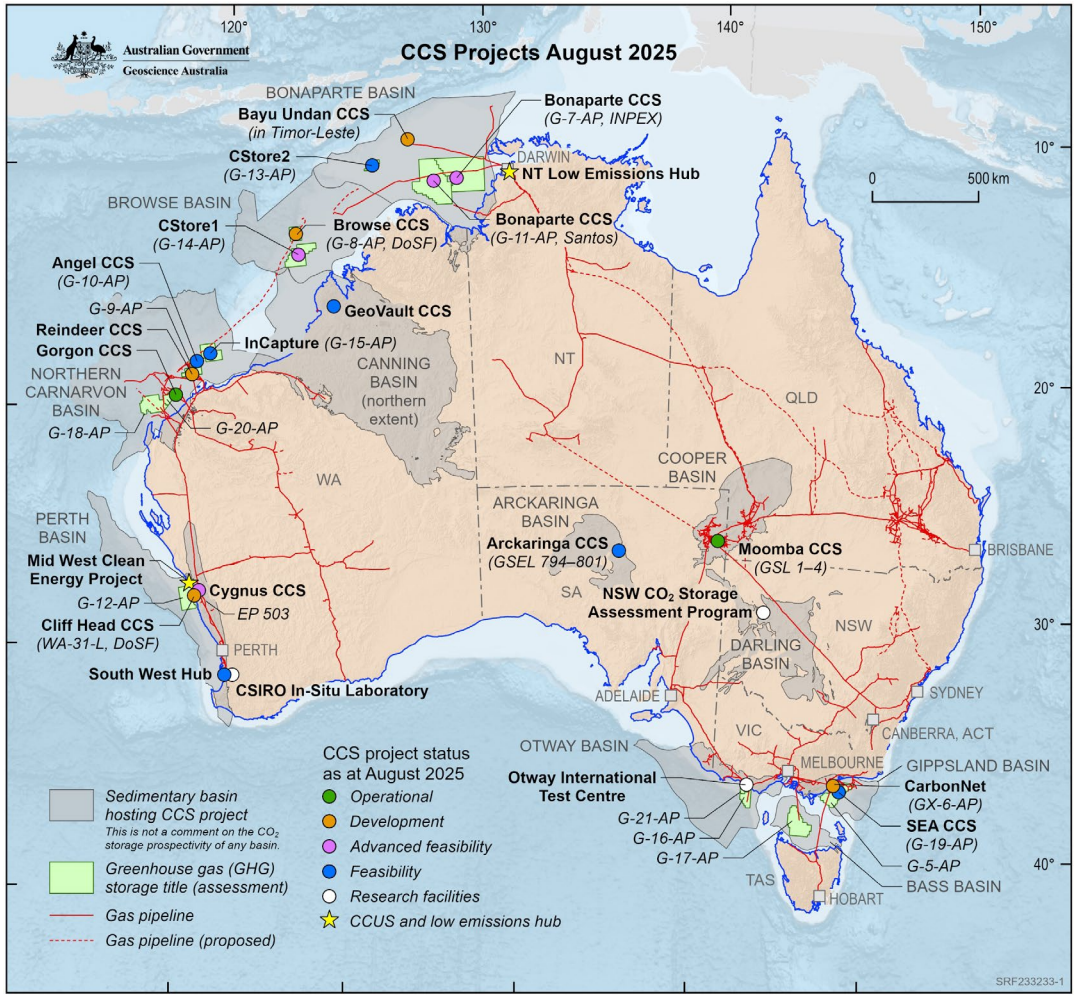
CCS Operations in Australia



On 12 June 2024, the Queensland Government banned all greenhouse gas (GHG) storage and injection activities in Queensland's Great Artesian Basin (GAB).
Pipelines routes from the GPInfo petroleum database.
DoSF: Declaration of an identified Greenhouse Gas Storage Formation.

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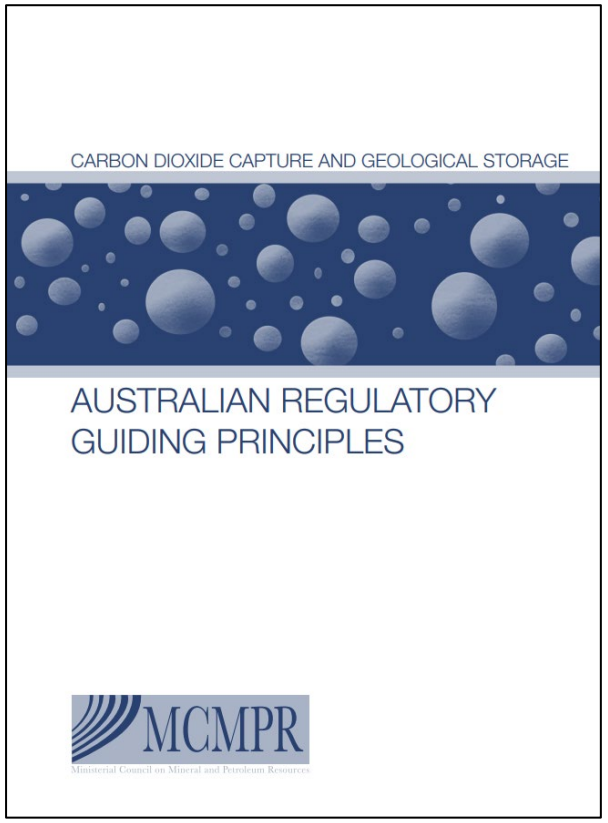
Effective CCS Legislation – historical context

In 2005 COAG/MCMPR published guiding regulatory principles for CCS, calling for:

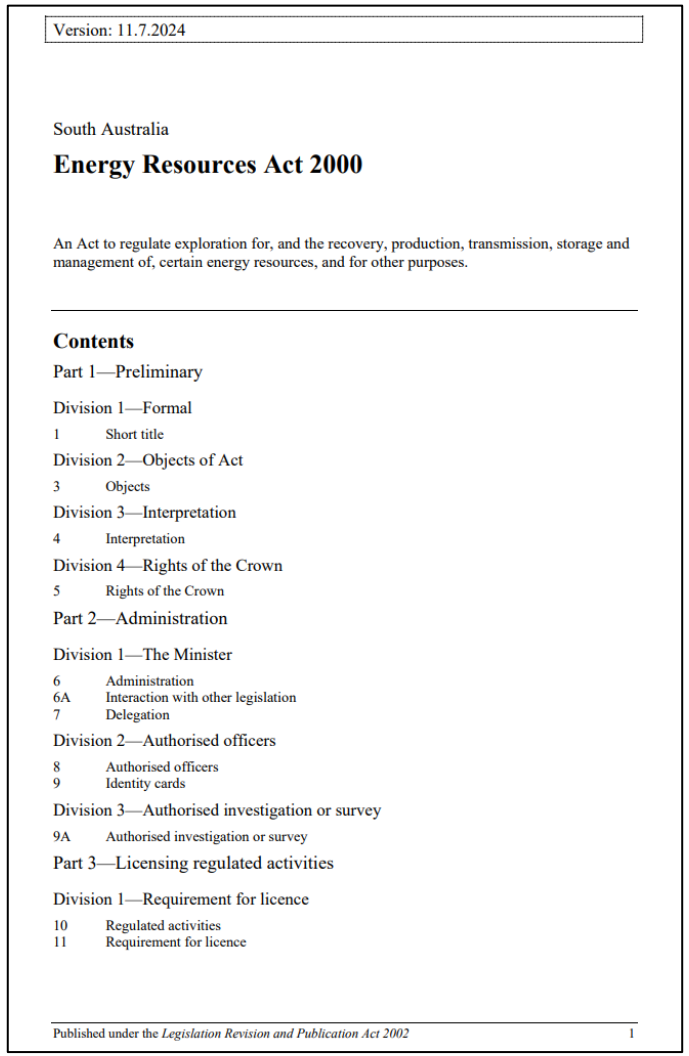
- Effective resource access and property rights
  - *Secure CCS storage rights – industry investment certainty*
- Nationally consistent assessment and approval processes
  - *Risk based regulation – i.e. demonstrated through deployment of recognized standards*
- Effective Monitoring and Verification
  - *Demonstrate CCS is working*
- Long term liability post closure
  - *Once secure storage is demonstrated – liability reverts to state*



South Australia's Regulatory Framework

- South Australian *Energy Resources Act 2000* covers all CCS stages - established in 2009 in response to the 2005 COAG/MCMPR guiding regulatory principles

1. Underground resources in Australia belong to the Crown – including the pore space for CCS.
2. Licensing – secure rights and tenure
3. Environmental assessment –
    a) focussing on risks and objectives to address those risks Moomba CCS Project EIR and Moomba CCS SEO
    b) early stakeholder engagement
    c) adoption of relevant and recognised standards
4. Efficient and effective approvals and surveillance
5. Effective and transparent Monitoring and Verification Monitoring and Verification Plan
6. Rental payments for use of pore space
7. Minimise risks of long-term liability



Version: 11.7.2024

South Australia

Energy Resources Act 2000

An Act to regulate exploration for, and the recovery, production, transmission, storage and management of, certain energy resources, and for other purposes.

Contents

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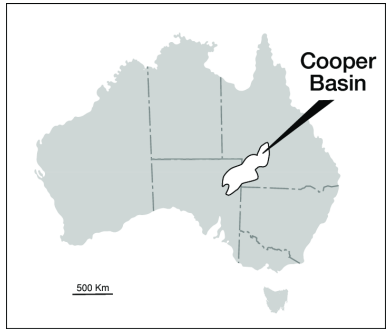
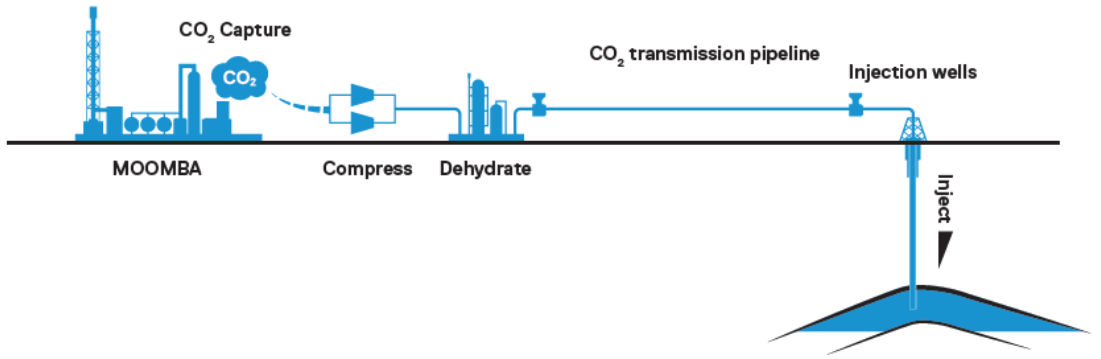
Moomba Carbon Capture and Storage Project

- First phase operational since 30 September 2024.
- Current injection of 1.7 Mtpa CO_2 from Moomba processing plant to depleted fields.
- 1.7 Mtpa represents approximately **7% of South Australia's total emissions**.
- Future phases target injection of 20 Mtpa from other local and international sources.
- Direct air capture trials planned at Moomba.

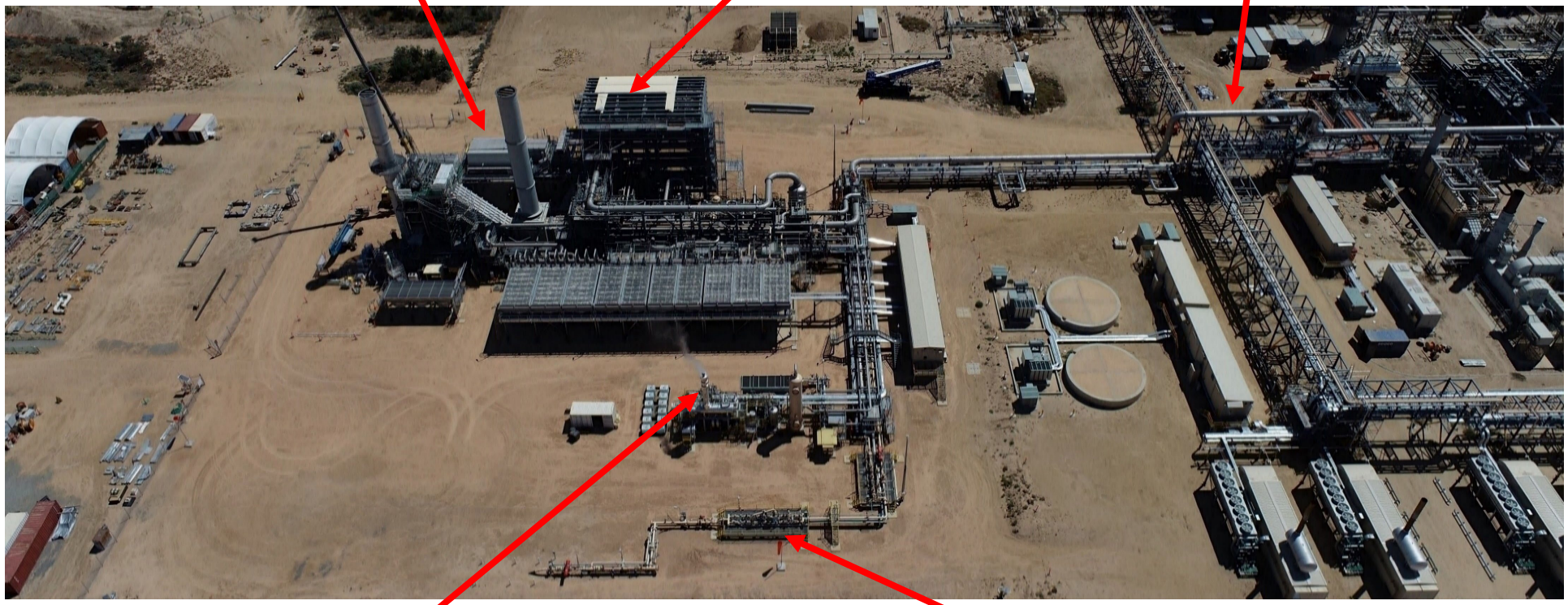




Phase 1 animation – Moomba CCS Project

Source: Santos Ltd.

Moomba CCS Facility



Source: Santos Ltd.

Moomba CCS Environmental Approval

- Objective/Risk based approach

- Environmental Impact Report (EIR)
  - Addresses all environment risks (natural/social/economic) and how risks will be managed to ALARP. – Moomba CCS Project EIR

- Statement of Environmental Objectives (SEO)
    - Prepared on the basis of addressing relevant risks detailed in the EIR:
        - Environmental objectives to be achieved
        - Assessment criteria to measure objectives
        - Gazette – activity and location specific regulation
        - Moomba CCS SEO
        - Key SEO requirement: approved public Monitoring and Verification Plan

MOOMBA MONITORING AND VERIFICATION PLAN

https://www.energymining.sa.gov.au/industry/energy-resources/regulation/projects-of-public-interest/cooper-basin-carbon-storage

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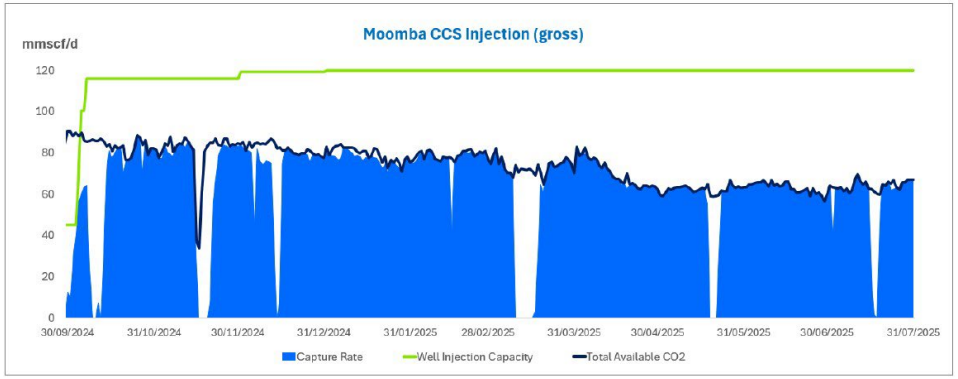
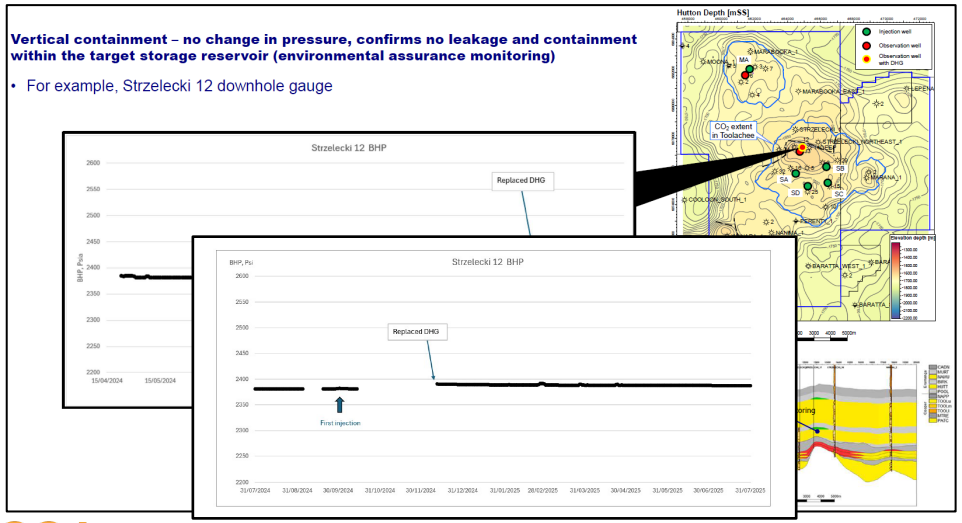
Establish community confidence in CCS by proving that CCS works – tell and show the world why CCS projects are proving to be successful e.g. Gorgon and Moomba – sell the wins!





Source: [Moomba M&V Plan and Reports]

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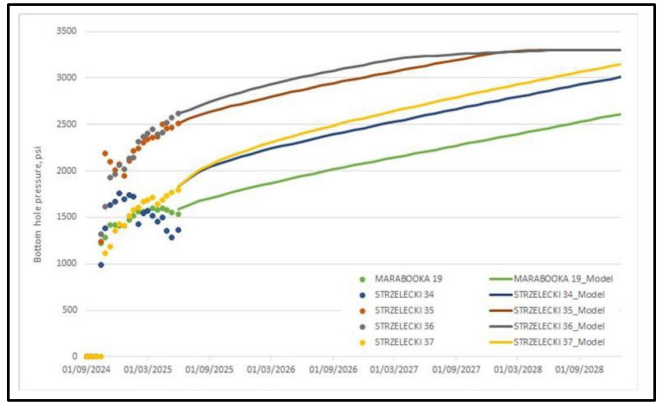
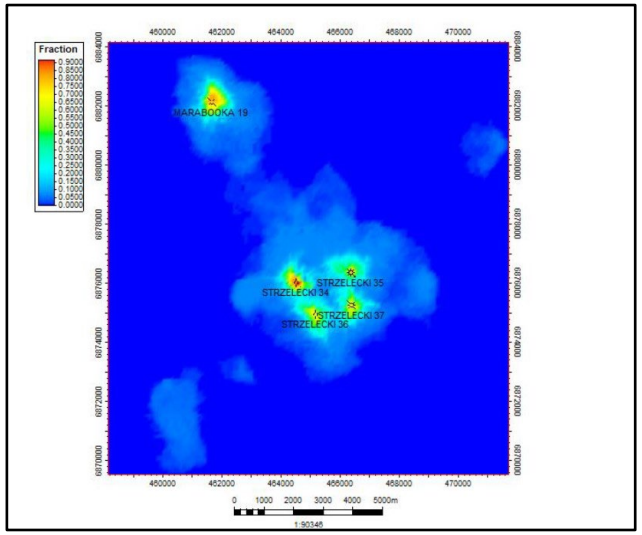
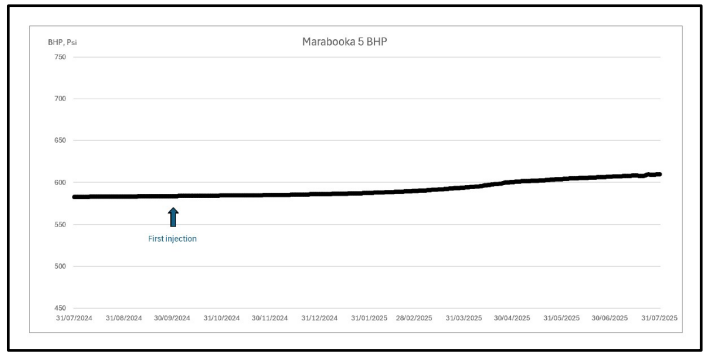
BHP Actual vs Modelled



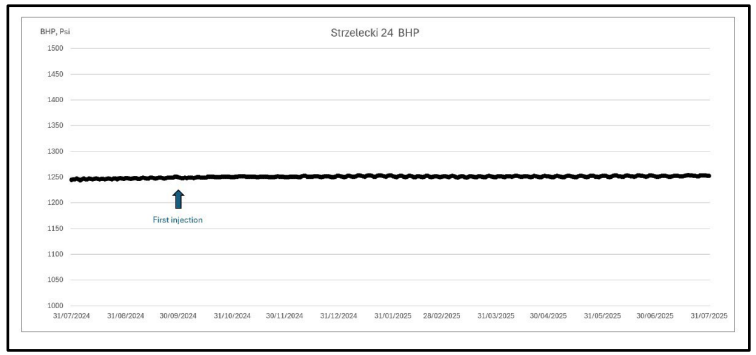
1 Million Tonne Injection Modelled



BHP Closest Monitoring Well



BHP Furtherst Monitoring Well



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Where to from here for CCS?

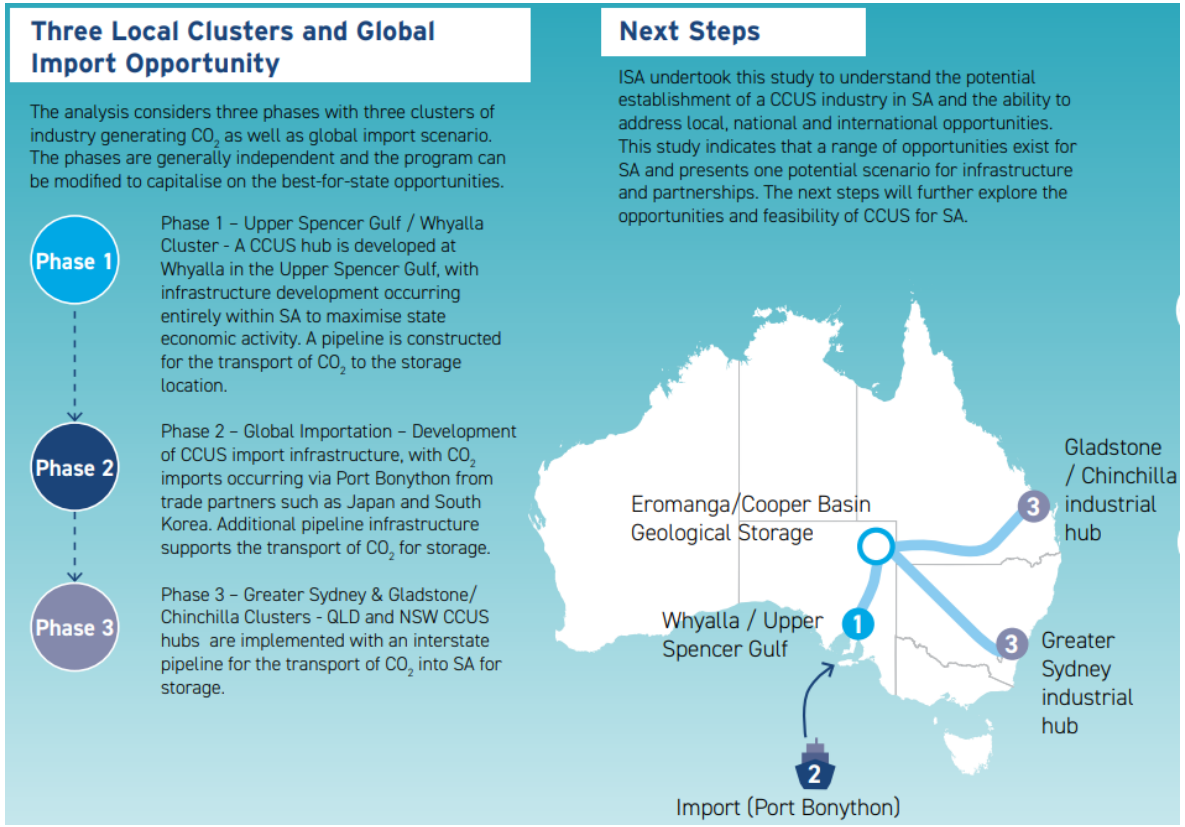
Some observations to progress CCS:

- Above all: must have consistent federal government CO_2 abatement policy, best to be technologically agnostic – don't pick winners – allow all technologies to serve their purpose
- Remove potential policy barriers to CCS deployment
- Best achieved through an effective financial incentive framework – e.g. ACCUs/carbon price/effective safe-guard mechanism?
- Recognise and acknowledge that CCS is "**a**" CO_2 abatement technology not "**the**" abatement technology
- Won't be long before narrative moves from "net-zero" to "net-negative" – hence importance of CCS
- Efficient, effective and practical regulation premised on:
    - Continuing development and implementation of best practice CCS standards including (M&V)

Some observations to progress CCS:

- Need economies of scale: establish CCS hubs – adjacent to point sources – e.g. steel/cement/power plants
- Viable Ship transport – Australia has potential to become Asia's CCS hub!
- Regional hub maybe? Australia/Indonesia/Malaysia work together?
- Government/industry partnerships
  – particularly for key infrastructure (SA Government CCUS Infrastructure Report)
- Establish community confidence in CCS by proving that CCS works – tell and show the world why Gorgon and Moomba CCS projects are proving to be successful – sell the wins!

South Australian Import Opportunity



Source: [Infrastructure SA, CCUS Infrastructure and National Supply Chain Study]

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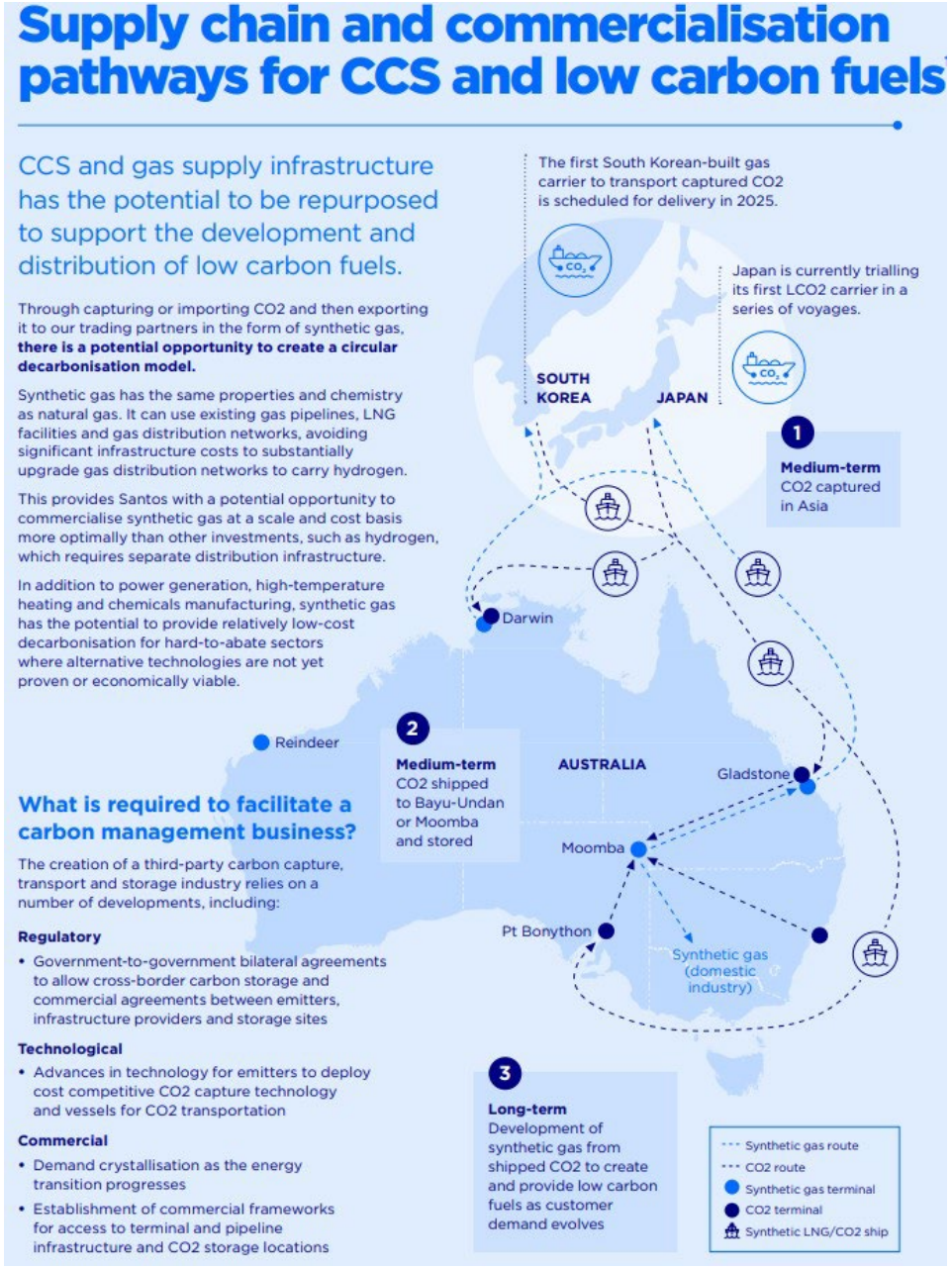
Commercialisation Pathways for CCS in Australia



Source: Santos [Climate Transition Action Plan | Santos | Santos]

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Thank You

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