Update for Carbon Sequestration Leadership Forum

October 2018
The CarbonNet Project

- Investigating the feasibility for a commercial-scale, multi-user CCS network in Gippsland, Victoria, Australia
- Jointly funded by the Australian and Victorian Governments to 2020
- Significant research investment to support CarbonNet e.g., ANLEC R&D
- CO2CRC is CarbonNet’s lead research organisation e.g., Commonwealth EIF assets
- Knowledge sharing via GCCSI
- Working collaboratively with industry to secure customers and investors in a CCS service
"carbon capture and storage (CCS) technology could support emissions reduction action across multiple pillars including from industrial processes such as gas processing, refineries and chemical manufacturing."
• Consistent with Climate Change Act and net zero emissions by 2050

• Sets initial emission intensity at 0.45 t CO2e/MWh.

• Acknowledges strong interest in new industries – for low emission, high value products for domestic and international markets eg hydrogen and fertilisers

• Identifies opportunities for new projects to mitigate emissions with CCS or offsets

• Commits to completing the CarbonNet project
CarbonNet Business Case - Approved to progress to Stage 3

- Project Development
- Procurement
- Construction
- Risk & Uncertainty
- Feasibility
- Concept
- We are here

Risks and uncertainty decreases as project progresses
Funding Commitments increase as project certainty increases

- Financing
- Procurement
- Construction
- Commissioning

High
Low

Funding
Committed
100%
10%
Outcomes of Stage 2 – Feasibility and Commercial Definition

- Geological storage site selection independently certified: portfolio of three sites including a prioritised site
- Secured of five greenhouse gas assessment permits: legal access
- Feasibility studies across full CCS chain: capture, transport and storage
- Environmental risk assessment: including air and groundwater potential impacts
- Risk-adjusted whole of life costings for CO2 transport and storage: service fee
- Regulatory framework review: regulatory fix plan being implemented
- Market soundings with industry: understanding preconditions for investors
CarbonNet’s Prioritised Storage Site - Pelican

Extensive modelling of injection scenarios:
- accounting for uncertainties & sensitivity
- capacity 125MT @ P90
- prepared draft Declaration of Storage
CCS Network – Feasibility Study Options
Risk-Adjusted Costings

- CCS is not a homogenous product
- The costs are directly related to source industry users

![Bar chart showing various industries and their corresponding $/t CO₂ costs with increasing carbon price.](chart.png)
Opportunities enabled by CCS: Hydrogen

Japanese Government has adopted a Hydrogen Society and Basic Hydrogen Strategy and supporting the KHI led HESC project project, along with Victorian and Australian Governments.

CSIRO Hydrogen Roadmap illustrates opportunities for Australia, and in particular Victoria through HESC.

Growing interest by domestic industry.
CarbonNet Stage 3 - Next steps

- CarbonNet storage site appraisal activities:
  - marine seismic survey- completed Feb 2018
  - offshore appraisal well- schedule for late 2019
- Stakeholder and community engagement:
  - raising awareness and confidence in CCS
- GipNet (EIF) validating environmental monitoring technologies:
  - onshore and offshore
- Commercialisation Pathway
  - Declaration of Storage
  - Injection Licence
  - Investment Facilitation in step with HESC
  - Ready project for transition to private sector around 2020/21
Marine Seismic Survey
• Stakeholder engagement during 2017 - extensive
• Regulatory permitting-Environment Plan approved
• Completed in Feb 2018
• Environmental monitoring ongoing
• Data analysis scheduled to be completed by end of 2018
Pelican Storage Site
Offshore Appraisal Well

Offshore Appraisal Well
- to collect rock samples for testing
- approx. 8 km offshore
- Commonwealth waters
- consultation recommenced in July

Two phases of activity
- Geotechnical and Geophysical investigations (late 2018/early 2019)
- Drilling Appraisal Well (late 2019)

Environmental and Regulatory approvals
- For each phase of activities
- Informed by stakeholder consultation
- Informed by risk assessments
Stakeholder Engagement
Community Confidence in CCS

- Public perception critical
  - Understanding local issues and interests
  - Building community confidence in CCS

- Access to information
  - Fact sheets
  - Presentations

- GCCSI / CarbonNet partnership:
  - Publication of 9 Knowledge Share Reports
  - Technical Papers in peer reviewed journals

- CO2CRC / CSIRO / UoM partnership:
  - GipNet environmental baseline validation
Microseismic (ANLEC R&D 7-0284)
• validate monitoring protocols in ‘noisy’ nearshore environment

Marine MMV (ANLEC R&D 7-0305)
• builds on precursor ANLEC scoping study (7-0314-0230)
• Validate monitoring methods in shallow waters, including autonomous vehicles

Atmospheric MMV (ANLEC R&D 7-0304)
• Applies proven open path technology but across the onshore and offshore environment over longer distances
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Modelling of Injection Scenarios

- 25 Years
- Halibut
- Lakes Entrance (Regional Seal)
- Cobia
- T2B (Key Seal)
- Crest

- 300 Years
- Halibut
- Lakes Entrance (Regional Seal)
- Cobia
- T2B (Key Seal)

- 1000 Years
- Halibut
- Lakes Entrance (Regional Seal)
- Cobia
- T2B (Key Seal)
Prioritised Storage Site – Pelican

Two existing wells + 2D and 3D seismic data define the structure.