



The CarbonNet Project

CarbonNet: CCS Enabling a Net Zero Future

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CarbonNet Principal Process Engineer
1st May 2025



Australian Government
Department of Climate Change, Energy,
the Environment and Water



Jobs, Skills,
Industry
and Regions



Acknowledgement of Traditional Owners

We acknowledge the Traditional Custodians of the lands on which we meet on today and their ongoing connection to lands, waters and communities.

We pay our respect to their culture and to Elders past and present.

We acknowledge and respect the Gunaikurnai people as the Traditional Custodians of Country on which the CarbonNet project is proposed.

Presentation outline

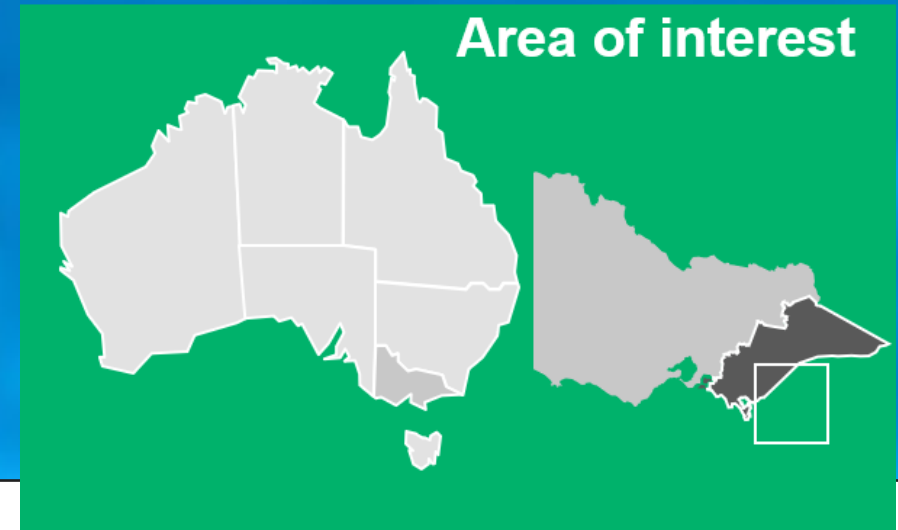
- 1 The CarbonNet project
- 2 Why CCUS is needed to get to net zero
- 3 The broader Australian context... scale of the task at hand
- 4 How CarbonNet can help
- 5 Alternatives to geological storage of CO₂

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CarbonNet is a government funded project

State & Commonwealth Governments have funded the project since 2009/10



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CarbonNet is a CO₂ transport and storage project



100km

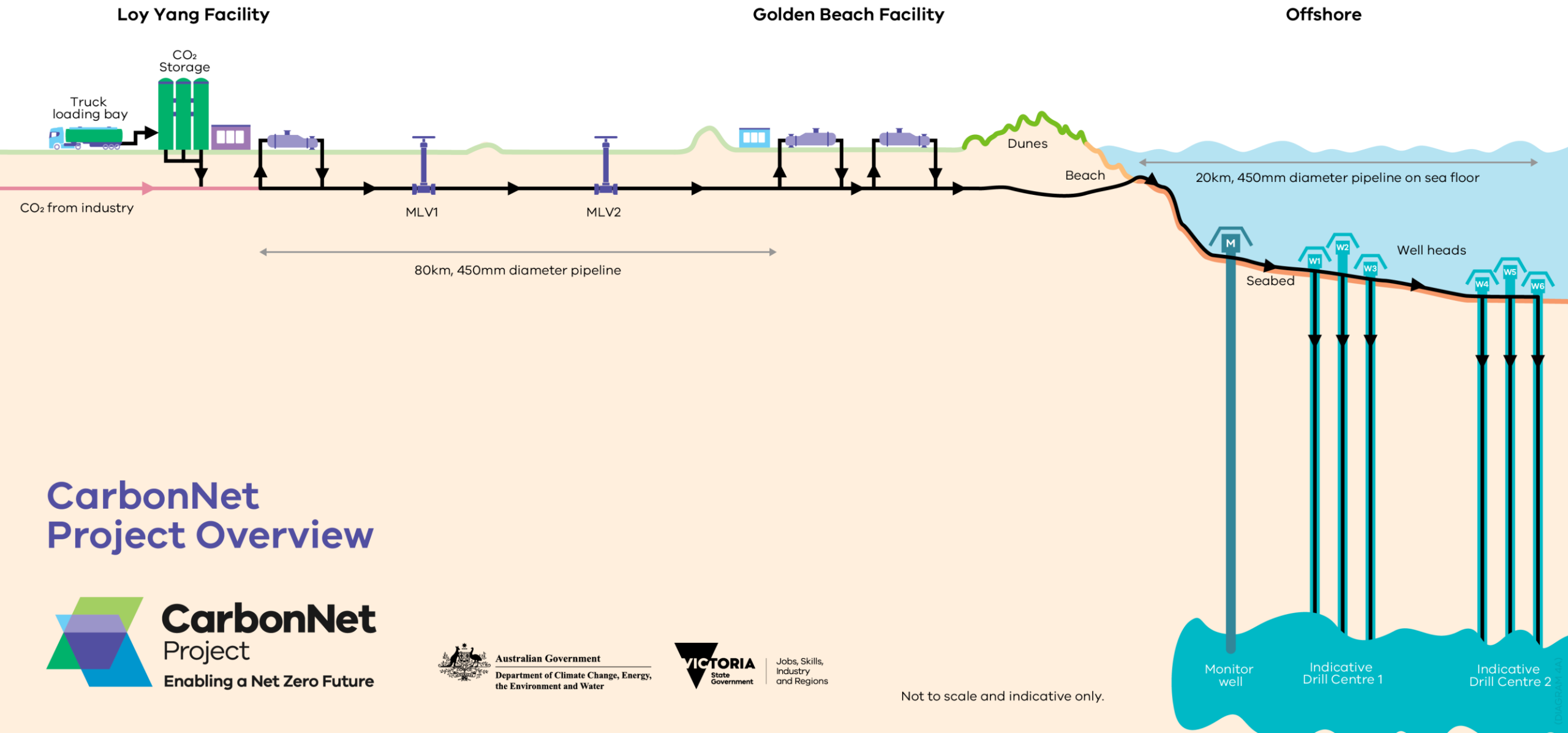
Underground pipeline

80km

Onshore

| 20km

Offshore



CarbonNet Project Overview



Not to scale and indicative only.

CarbonNet's offshore permits



LEGEND

- Preferred pipeline corridor
- State Forest
- Pelican Permit GX-6-AP
- Kookaburra Permit G-5-AP

10 km

Environment Protection and Biodiversity Conservation (EPBC) Act 1999

Native Title Act 1993

Environment Effects Act 1978

Aboriginal Heritage Act 2006

Environment Protection (Sea Dumping) Act 1981

Offshore Petroleum and Greenhouse Gas Storage (OPGGS) Act 2006

Marine and Coastal Act 2018

Pipelines Act 2005

Land Acquisition and Compensation Act 1986

Planning and Environment Act 1987

Environment Protection Act 2017

Victorian State waters
Commonwealth waters

High-tide mark

Low-tide mark

HDD exit point



80km Onshore CO₂ pipeline

Victorian Onshore

| Onshore Transport | |
|--|---|
| EPBC Act 1999 | Approval |
| Environment Effects Act 1978 | Minister's Assessment informs Victorian statutory approvals |
| Native Title Act 1993 | Indigenous Land Use Agreement or Future Act Provision |
| Pipelines Act 2005 | <ul style="list-style-type: none"> • Pipeline Licence • Pipeline Consultation Plan • Environment Management Plan • Safety Management Plan |
| Marine and Coastal Act 2018 | Consent for use and development of coastal crown land within 200m of high-water mark |
| Land Acquisition and Compensation Act 1986 | Compensation agreed in accordance with Act |
| Aboriginal Heritage Act 2006 | Cultural Heritage Management Plan |
| Planning and Environment Act 1987 | Planning permit(s) |
| Environment Protection Act 2017 | Development Licence(s) |

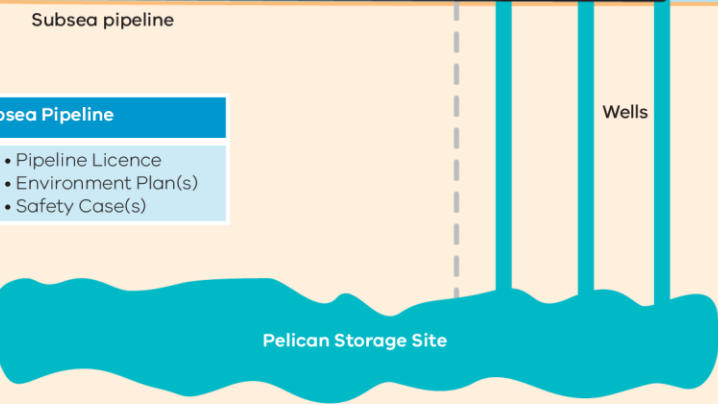
Drilling and Subsea Facilities

OPGGS Act 2006

- Injection licence
- Site plan
- Environment Plan(s)
- Safety Case(s)
- Well Operations
- Management Plan



Wells



| Offshore Transport and Storage | |
|--------------------------------|---|
| EPBC Act 1999 | Approval |
| Environment Effects Act 1978 | Minister's Assessment informs Victorian statutory approvals |
| EP (Sea Dumping) Act 1981 | Consent |
| Marine and Coastal Act 2018 | Consent |

Subsea Pipeline

OPGGS Act 2006

- Pipeline Licence
- Environment Plan(s)
- Safety Case(s)

Pelican Key Primary Approvals



*Indicative only. Current October 2024 (DIAGRAM 5A)

Project status summary

FEED

Front End Engineering Design complete

- Completed Q1 2024
- Informs cost, materials and construction timeline
- Provides material details, such as pipeline specification.

Pipeline

Pipeline Consultation Plan approved by the Pipeline Regulator

- Landowner liaison commenced in September 2023 to achieve Land Access Agreements for survey work
- Community consultation ongoing
- Collaborating with other projects in the region.

Approvals

Various approvals are required, which include

- Environment Effects Statement (State)
- Environmental Impact Statement (Commonwealth)
- Injection Licence (Commonwealth)
- Sea Dumping Permit (Commonwealth)



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Alternatives to geological storage of CO₂

Carbon Capture Utilisation and Storage (CCUS) – is it needed?



01

"Achieving net-zero goals will be virtually impossible without CCUS"

IEA (2021), <https://www.iea.org/commentaries/is-carbon-capture-too-expensive>

02

"CCUS expands rapidly across all scenarios, including the high renewable scenario"

Net Zero Australia report Final Modelling results (2023)

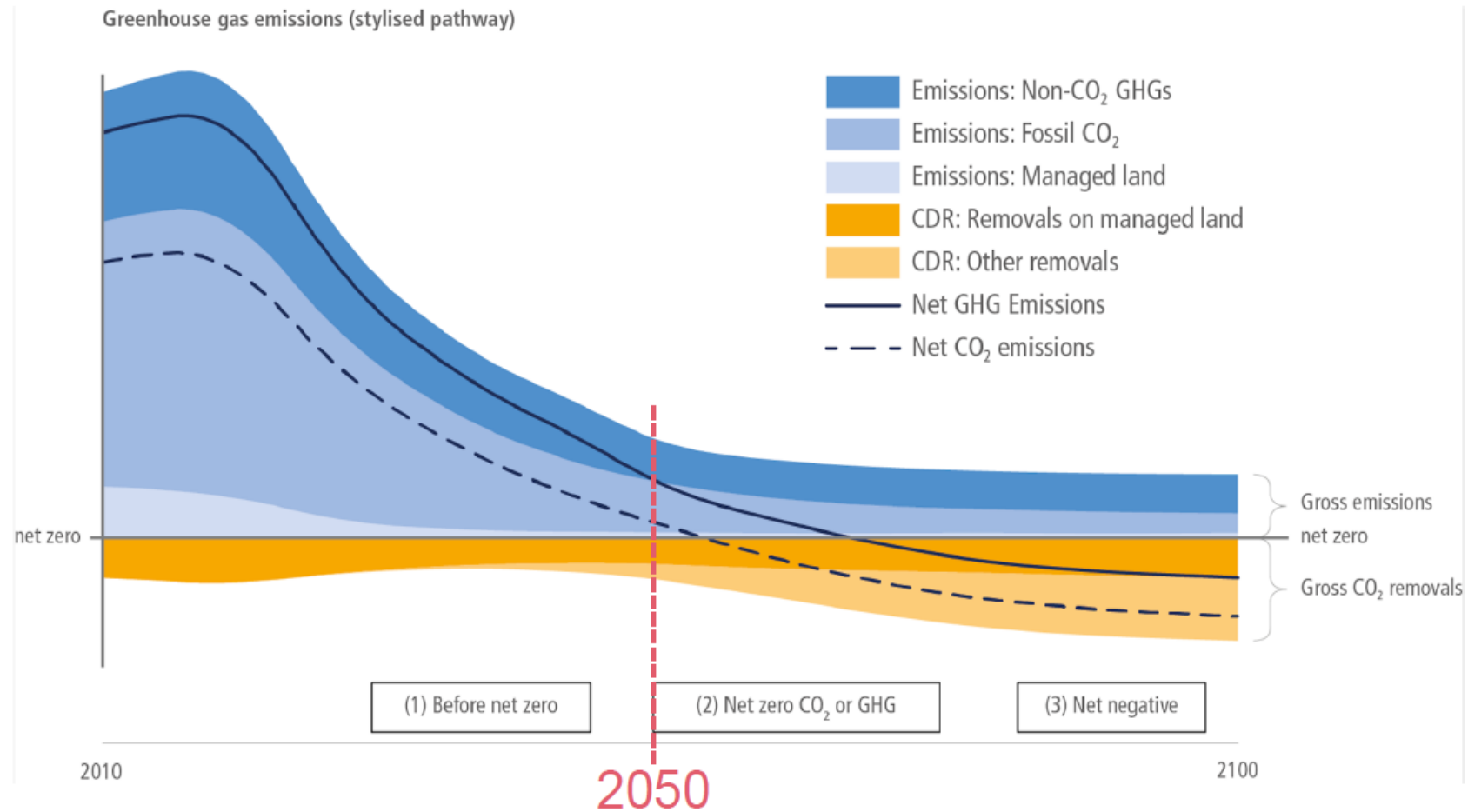
03

"Before we stop using fossil fuels, we need to stop fossil fuels causing global warming"

Prof Myles Allen, Head of Atmosphere, Oceanic and Planetary Physics, University of Oxford

Lead Author, IPCC Special Report on 1.5





Source: Roles of Carbon Dioxide Removal (CDR) in global or national mitigation strategies, IPCC, WGII, AR 6

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Australia's top 4 export earners and their CO₂ footprints

| Industry | Export income | CO ₂ emissions pa | N° of CarbonNets before other abatement efforts | Source |
|----------------------|------------------------------------|-------------------------------|---|---|
| 1. Iron ore | \$139 billion (2023) ¹ | 1500 Mtpa ² (2022) | 250 | 1. Coal Geoscience Australia 2. https://www.csiro.au/en/news/All/Articles/2022/May/Net-zero-steel |
| 2. Coal | \$113 billion (2022) ³ | 1150 Mtpa ⁴ (2022) | 192 | 3. Department of Climate Change, Energy, the Environment and Water 2023b. Australian Energy Statistics , Table I (last accessed 22 March 2024). 4. https://www.iea.org/countries/australia/coal |
| 3. Natural gas / LNG | \$69.5 billion (2024) ⁵ | 225 Mtpa ⁶ (2022) | 38 | 5. STO ASX: LNG sales crash 25pc as prices drop 6. https://www.iea.org/countries/australia/natural-gas |
| 4. Education | \$50.5 billion (2024) ⁷ | << 40Mt (2022) ⁸ | <<7 | 7. Recording of international students in the balance of payments Australian Bureau of Statistics 8. Guesstimate based on electricity consumption only |

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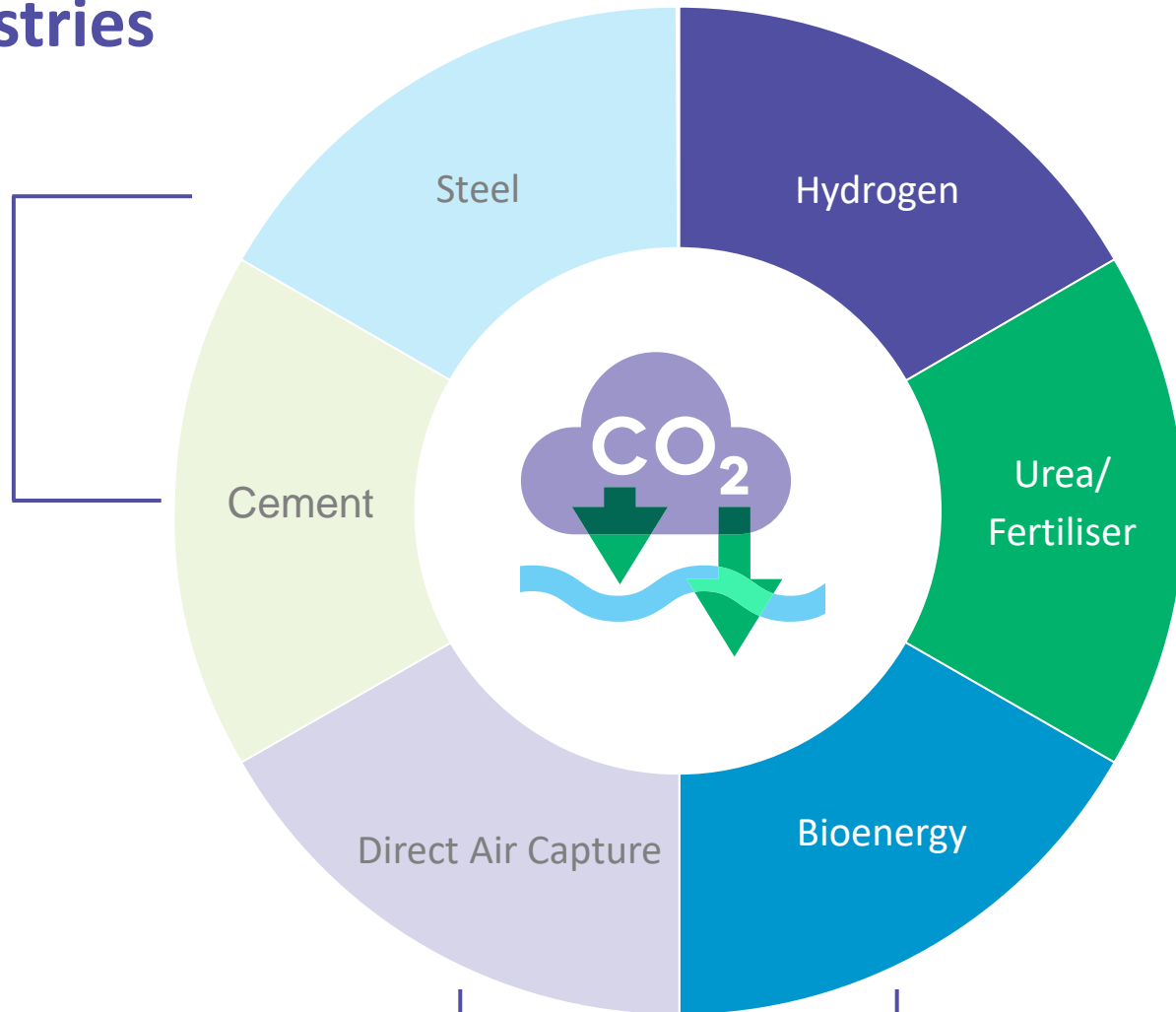
How CarbonNet can help

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Alternatives to geological storage of CO₂

Enabled industries

Hard to abate sectors



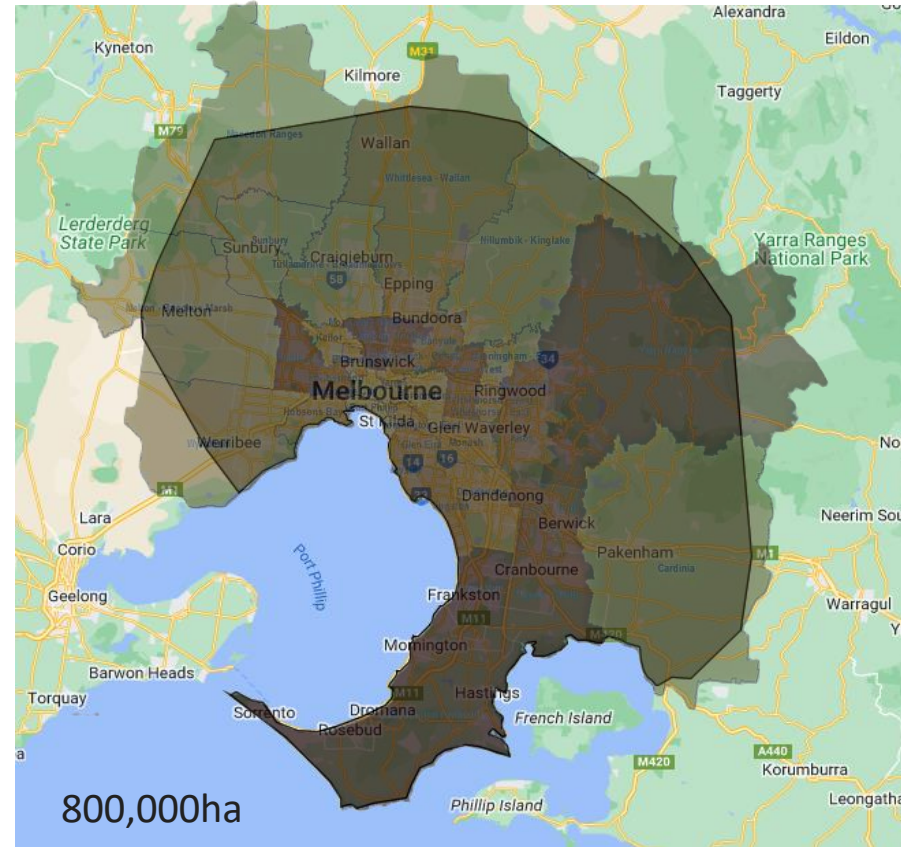
New industries for Gippsland

Negative emissions

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6 Mtpa sequestration for 25 years is equivalent to:
planting 800,000ha of trees



800,000ha = 80% of the area of Greater Melbourne

6 Mtpa sequestration for 25 years is equivalent to:
planting 800,000ha of trees



800,000ha = 115,000 MCGs*

Key Takeaways

1 Project is making progress. Still more to do

2 Net zero is hard. Will need CCS to reach targets

3 CCS can help – hard to abate and new low emissions industries

4 CCS offers at-scale emissions reduction and permanent storage

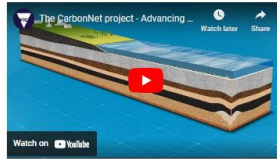
Keep up to date:

www.vic.gov.au/CarbonNet

The CarbonNet Project is working towards establishing a commercial scale Carbon Capture and Storage (CCS) hub in Gippsland, Victoria.

CCS is being investigated in Victoria, and implemented around the world, because it is recognised as having an important role in reducing greenhouse gas emissions from industry.

CarbonNet plans to build a 100km CO₂ pipeline from the Latrobe Valley to the Gippsland Basin, enabling new decarbonised industries to contribute to Victoria's 2035 interim emissions reduction target and a net zero emissions outcome by 2045.



[View transcript](#)

| | | |
|--|--|---|
| | | |
| <p>About CarbonNet A Carbon Capture and Storage (CCS) project which will decarbonise industry in Gippsland.</p> | <p>What is CCS? Carbon Capture and Storage (CCS) is one of the many solutions to achieving net-zero CO₂ emissions.</p> | <p>Why Gippsland Gippsland is a world leading location for CO₂ storage.</p> |
| | | |
| <p>Community consultation Have your say and learn about upcoming events.</p> | <p>Approvals and investigations CarbonNet's program of investigations and environmental approvals.</p> | <p>Carbon Capture and Storage FAQs Discover answers to frequently asked questions.</p> |

CarbonNet Project
Enabling a Net Zero Future

October 2023

In this edition

- CarbonNet project update
- Building Australia's carbon removal industry
- CarbonNet at the Gippsland New Energy Conference
- Gipps Youth New Energy Summit
- Committee for Gippsland launch Hydrogen Roadmap
- New CO₂CRC Essentials Course
- CCS news from around the world
- Upcoming industry events

CarbonNet Project update

On 25 August the Victorian Pipeline Regulator (within the Department of Energy, Environment and Climate Action) approved CarbonNet's Pipeline Consultation Plan (PCP). The approval of the PCP allowed for landholder liaison to commence across the proposed 80km onshore pipeline corridor in Gippsland. The CarbonNet team is currently working to individually contact all potentially impacted landholders to seek access to their land, initially to conduct Spring and Summer surveys. The proposed CarbonNet pipeline route is not final and will be informed by landholder and community engagement, front end engineering design and survey outcomes.

[View CarbonNet's Pipeline Consultation Plan.](#)

Building Australia's carbon removal industry

Jane Burton and Victoria Mendes Da Costa from the CarbonNet project presented at the recent Atmospheric Carbon Removal Summit hosted by the University of Technology, Sydney. The summit was well attended by national and international representatives seeking to meet global emissions targets through removing CO₂ from the atmosphere via multiple methods. Topics included CO₂ sequestration, Direct Air Capture, Carbon Mineralisation, and the role of the ocean, rocks and agriculture in decarbonisation.

Roger Ames, Senior Advisor for CO₂ Removal at the Office of the Under Secretary for Energy and Innovation at the US Dept of Energy, was the summit's keynote speaker. He provided an excellent insight into US strategy and government support for CO₂ removal technologies and the need to progress the sector in Australia. Speakers and attendees emphasised that all CO₂ removal methods are needed immediately, alongside emissions reduction. The geological storage of CO₂ at scale was acknowledged as critical to reduce CO₂ from the atmosphere.

CarbonNet's Jane Burton speaks on a panel at the summit. Image courtesy of the Atmospheric Carbon Removal Summit.

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Any questions?

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