

GipNet

What is GipNet?

GipNet is a research initiative that has been established to provide support to a potential carbon capture and storage (CCS) project in the Latrobe Valley named CarbonNet.

The GipNet research initiative is designed to test and validate equipment and technologies that will help CarbonNet monitor and, if necessary, respond to changes in the environment. Instruments are tested to prove they are reliable and durable for the coastal and marine environment and return accurate measurements.

Over the next three years the GipNet project will test instruments that can be used to measure air quality, water quality, seabed and marine life health and earthquake activity.

What is CarbonNet?

The CarbonNet Project is investigating the potential for establishing a commercial-scale CCS network in the Latrobe Valley. CarbonNet aims to capture carbon dioxide (CO₂) released by industrial processes in the Latrobe Valley, compress and transport it to an injection site offshore, then store it deep under the seabed in suitable secure geological formations – similar to the way oil and gas has been stored underground for millions of years.

The CarbonNet project offers significant opportunities for new industries in Gippsland and for new jobs and investment, particularly in hydrogen and fertiliser production. At the same time, the project could make a substantial contribution to reducing Victoria's and Australia's CO₂ emissions.

CarbonNet is working with Australia's leading science and research organisations, including CO₂CRC, CSIRO, ANLEC R&D and a range of universities, to make sure the project is safe, effective, and able to make a significant contribution to the global effort to combat climate change.

What is carbon capture and storage?

Carbon capture and storage is a proven emissions reduction technology that involves capturing large amounts of CO₂ from industrial sources. This CO₂ would otherwise be released into the atmosphere. It is then transported for safe, long-term storage deep underground.

CCS activities have been in operation globally for more than two decades, safely storing millions of tonnes of CO₂.

The CCS process typically consists of four key steps:

- > The CO₂ is captured and purified.
- > The CO₂ gas is then compressed into a liquid-like form.
- > It is transported through a pipeline to a suitable injection site.
- > The CO₂ is injected deep below the ground (at a depth of 1 to 3 km) into a secure geological formation for permanent storage. Typical storage formations are areas of porous rock (reservoirs) that trap the CO₂ under thick layers of impermeable rock that act as seals, similar to oil and gas fields.



There are three specific research projects within the GipNet research initiative.

The **Seismology Monitoring Network** will provide high accuracy earthquake (seismic) monitoring across the Gippsland Basin, a region with very few existing earthquake monitoring sites. The network will enable the precise location of local earthquakes, allowing a detailed understanding of these background earth movements and other geophysical properties of the region. By using innovative and cost-effective instruments and installation practices, we can maximise the number of sites able to be installed, greatly improving the effectiveness of the network.

The earthquake measuring devices (seismometers) will be positioned in quiet locations away from sources of noise such as roads, power lines and heavily populated areas. Sites such as national parks and farm land are ideal locations. The seismometer itself sits on hard, rocky ground or within a posthole, with all other equipment housed in a small self-contained box. Using a modem, data is transmitted back to the University of Melbourne, meaning the network can be remotely monitored and any movement of the ground caused by earthquakes detected.

The **Atmospheric Monitoring Network** is developing a method of detecting emissions to the atmosphere as well as attributing where they have come from. The method is based on new atmospheric modeling techniques combined with atmospheric monitoring instruments. The researchers are developing a passive light-based system for measuring CO₂ in the atmosphere. The system uses an instrument that points invisible and harmless light at a series of reflectors in the Gippsland Basin. The project leaders are pioneers at developing models and instruments that detect emissions to the atmosphere.

The researchers will test the technology for suitability in the Gippsland environment, and use the findings to determine the future location of instruments and reflectors.

The **Marine Monitoring Network** is being led by CSIRO Oceans and Atmosphere. Their involvement is required because many of the best sites for storing CO₂ are located below the ocean floor. The team, who have extensive research experience, will study the natural variability of the marine environment. This will enable operators to develop environmental monitoring programs that provide public assurance and address regulatory requirements. As part of their research CSIRO will be testing floating and submerged monitoring equipment that measures natural changes in seawater CO₂ levels and other environmental properties near-shore.

Where can I get more information?

CO2CRC is the lead organisation for the GipNet research initiative. To find out more about CO2CRC visit co2crc.com.au or call (03) 8595 9600.

You can get more information on CarbonNet from the Earth Resources website earthresources.vic.gov.au/carbonnet

