Torquay Sub-basin

SOUTHERN VICTORIA, OFFSHORE

Reservoir:
Eastern View Group, Boonah Fm, Crayfish Sub-group

Seal:
Anglesea Siltstone, Eumeralla Formation

HYDROCARBON POTENTIAL
No commercial oil or gas discoveries have been made despite the presence of numerous shows.

OIL AND GAS FIELDS
WELLS AND SEISMIC COVERAGE
RESERVOIR THICKNESS

REGIONAL SEAL AREA

REGIONAL CROSS SECTION (LOCATION IN OIL AND GAS FIELDS MAP)

BASIN RANKING VS. CAPACITY
**Torquay Sub-basin**

**Porosity vs. Depth**

- **Porosity (%)** vs. **Depth (m)**
  - Porosity (%) values range from 0 to 40.
  - Depth values range from 0 to 4000 m.

**Porosity vs. Permeability**

- **Porosity (%)** vs. **Permeability (mD)**
  - Permeability values range from 0.001 to 10000 mD.
  - Porosity (%) values range from 0 to 40.

**Reservoir Pressure vs. Depth**

- **Reservoir Pressure (DST & WFT) (psia)** vs. **Depth (TVDm)**
  - Reservoir Pressure values range from 0 to 3000 psia.
  - Depth values range from 0 to 2000 m.

**Fracture Pressure vs. Depth**

- **Fracture Pressure (psia)** vs. **Depth (TVDm)**
  - Fracture Pressure values range from 0 to 4600 psia.
  - Depth values range from 0 to 2000 m.

**Injection Parameters**

- **Potential Injection Parameters**
  - **Storage Capacity Curve**
  - **Market Potential**

**Basin Ranking**

- **Category**
- **Description**
- **Score**
- **Weighting**
  - **Tectonics (Seismicity)**
    - Medium/Low: 4, 0.00
  - **Size**
    - Small: 1, 0.06
  - **Depth**
    - Deep: 2, 0.10
  - **Type**
    - Non-marine and Marine: 2, 0.04
  - **Faulting intensity**
    - Limited: 3, 0.14
  - **Hydrogeology**
    - Good: 3, 0.04
  - **Geothermal**
    - Moderate: 2, 0.05
  - **Hydrocarbon potential**
    - None: 1, 0.05
  - **Maturity**
    - Exploration: 2, 0.05
  - **Coal and CBM**
    - Deep: 3, 0.00
  - **Reservoir**
    - Good: 4, 0.16
  - **Seal**
    - Good: 4, 0.18
  - **Reservoir/Seal Pairs**
    - Good: 3, 0.03
  - **Onshore/Offshore**
    - Shallow Offshore: 2, 0.00
  - **Climate**
    - Temperate: 5, 0.00
  - **Accessibility**
    - Acceptable: 3, 0.00
  - **CO2 sources**
    - Moderate: 3, 0.00
  - **Knowledge level**
    - Moderate: 2, 0.05
  - **Data availability**
    - Moderate: 2, 0.05

**Overall Ranking**: 26

**Storage Capacity Estimate**

- **Parameter**
- **Unit**
- **Score (P90)**
- **Score (P50)**
- **Score (P10)**
- **Distribution**
  - **Area of storage region**
    - km²: 1000, 1500, 2100 (Triangular)
  - **Gross thickness of saline formation**
    - m: 200, 300, 400 (Triangular)
  - **Average porosity of saline formation over thickness interval**
    - %: 17, 20, 23 (Triangular)
  - **Density of CO2 at average reservoir conditions**
    - tonne/m³: 0.5, 0.6, 0.7 (Triangular)
  - **E-storage efficiency factor (% of total pore volume)**
    - %: 4, 4, 4 (Triangular)
  - **Calculated storage potential**
    - gigatonnes: 1.6, 2.2, 2.9

**Potential Injection Parameters**

- **Parameter**
- **Unit**
- **Shallow**
- **Mid-Depth**
- **Deep**
  - **Depth base seal**
    - m: 800, 1000, 1100
  - **Formation thickness**
    - m: 300, 500, 700
  - **Injection depth**
    - m: 1100, 1500, 1800
  - **Porosity**
    - %: 27, 25, 23.5
  - **Absolute permeability**
    - mD: 900, 300, 130
  - **Formation pressure**
    - psia: 1500, 2170, 2810
  - **Fracture pressure**
    - psia: 2810, 3840, 4610

*Insufficient data for the following items:*
- Top Seal Potential Graph
DISCLAIMER

The purpose of these montages is to aid a high level evaluation of the geological storage potential of Australia’s sedimentary basins for future CO₂ emissions. The evaluations are based on core analysis and other data derived from Geoscience Australia and other sources. However due to time constraints, it has not been possible to carry out the detailed evaluation of the data, which will be required for the next phase of analysis.

In this exercise, we sought to recognise a range of characteristics within each basin by identifying three sets of parameters at different locations and depths in the basin. The intent is to generate an indication of a range of storage capacity and potential injection rates. These capacities and rates are being used in high level reservoir modelling work to generate injection tariffs* and capacity estimates. All of this work feeds into a process that provides indicative, conceptual transport and storage tariffs for CO₂ emissions captured in various parts of Australia.

This 'top down', simplistic approach seeks to describe the magnitude and range of potential costs for transport and storage in Australia, at a 'conceptual' level of accuracy. Clearly, any final investment decision would call on an increased understanding and level of accuracy through the usual project development process.

* Cost per tonne of CO₂ avoided, calculated using the net present value of cash flows over a 25 year asset life.

REFERENCES
