Medway Hub
Carbon Capture & Storage Project

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Medway Hub CCS Overview

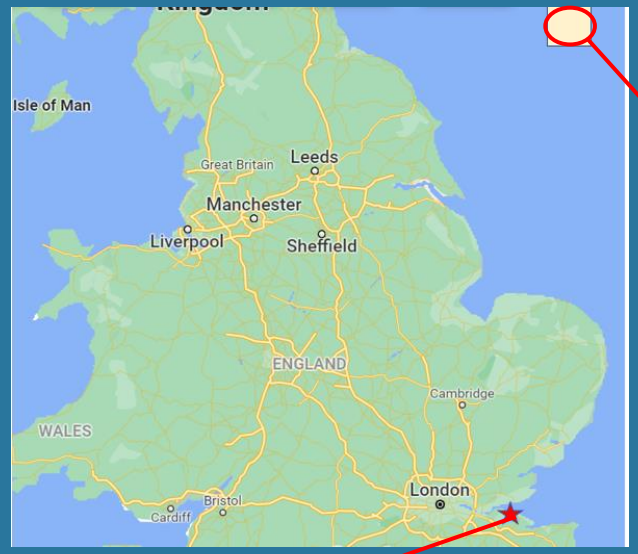
- Carbon capture and storage of CO_2 from 3 major CCGT power stations located on the Isle of Grain near Rochester, Kent
- Scheme involves CO_2 extraction from exhaust stream at Medway, Damhead and Grain power stations
- Liquid CO_2 transported via tanker to Esmond and Forbes depleted gas fields for permanent storage
- Axis Well Technology pre-FEED study completed January 2022

3077 MW
Peak capacity
Medway, Damhead + Grain CCGT

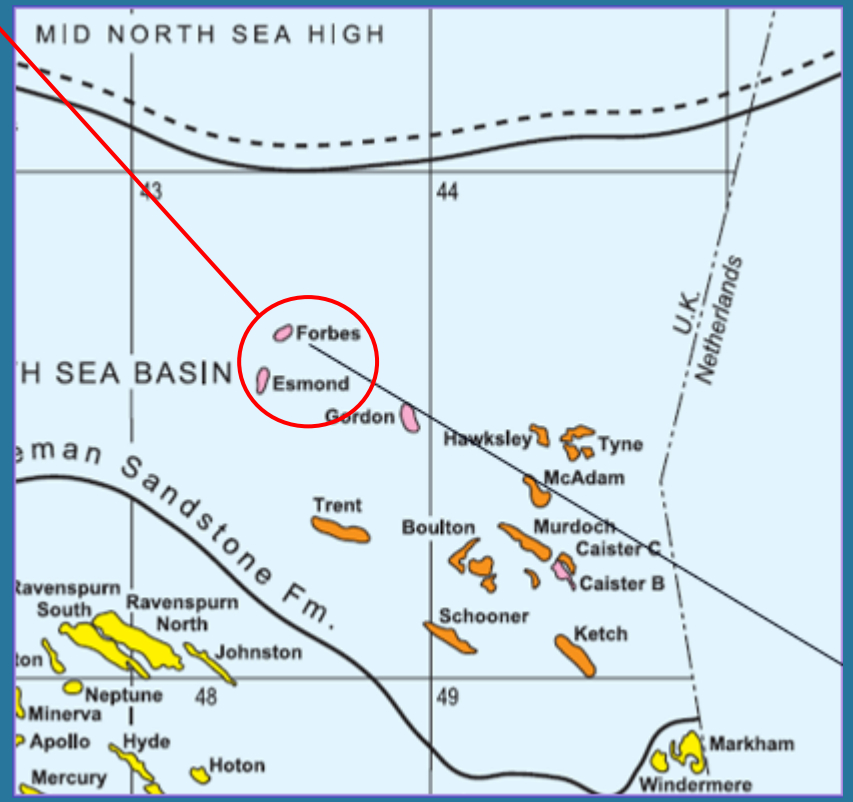
7.6 MTa CO_2
Peak emissions

173 MT CO_2
Esmond + Forbes
Storage capacity

Medway Hub CCS Overview (cont.)



Isle of Grain CCT detail



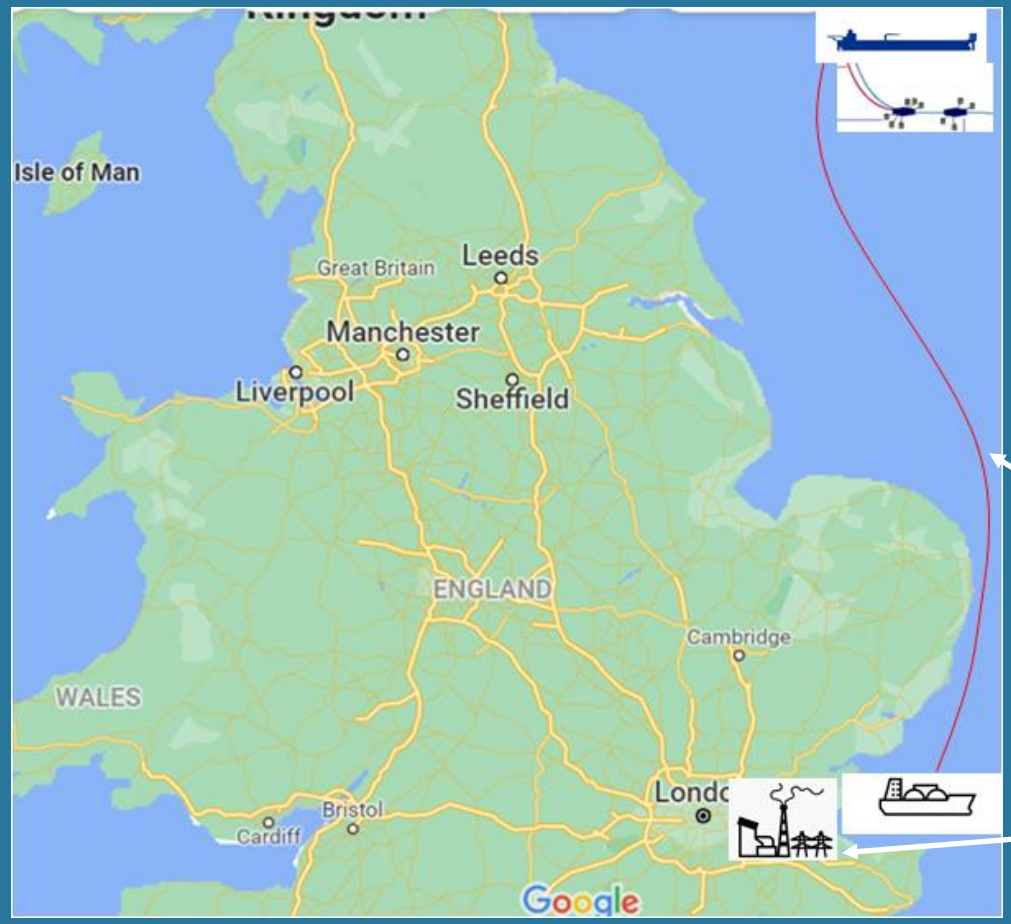
Esmond + Forbes depleted gas fields

Medway Hub CCS Methodology

- The project is a simple carbon capture and storage scheme and involves:
  - Separation of CO_2 from exhaust streams in situ
  - Liquefaction of CO_2 at Isle of Grain LNG terminal (For Damhead, CO_2 is compressed and transported via c. 10 km pipeline to Isle of Grain LNG terminal for liquefaction)
  - Storage of liquid CO_2 in storage tanks at IoG LNG terminal
  - Batch loading of liquid CO_2 onto CO_2 tanker at the IoG LNG terminal
  - Transport of liquid CO_2 to Esmond / Forbes fields for injection into depleted reservoirs

Medway Hub CCS Schematic

Scheme provides for the installation of a Floating Injection, Storage and Offloading (FISO) vessel at the Esmond and Forbes fields with CO_2 cargoes delivered direct from the IoG



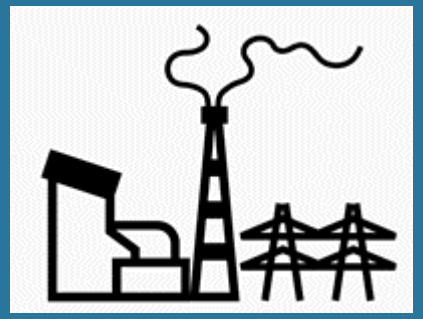
FISO

Forbes / Esmond subsea manifolds

Transport of liquid CO_2 by sea tanker

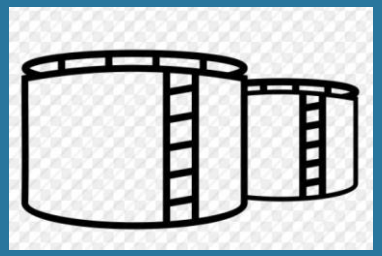
CCGT power stations at IoG

Medway Hub CCS Schematic



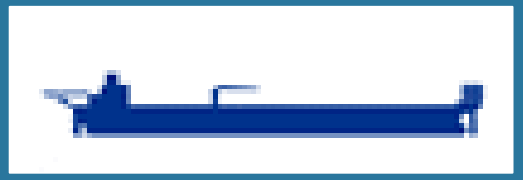
CCGT power station

CO2 extraction

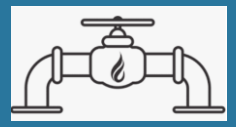


CO2 liquefaction & storage IoG

CO2 transportation



FISO



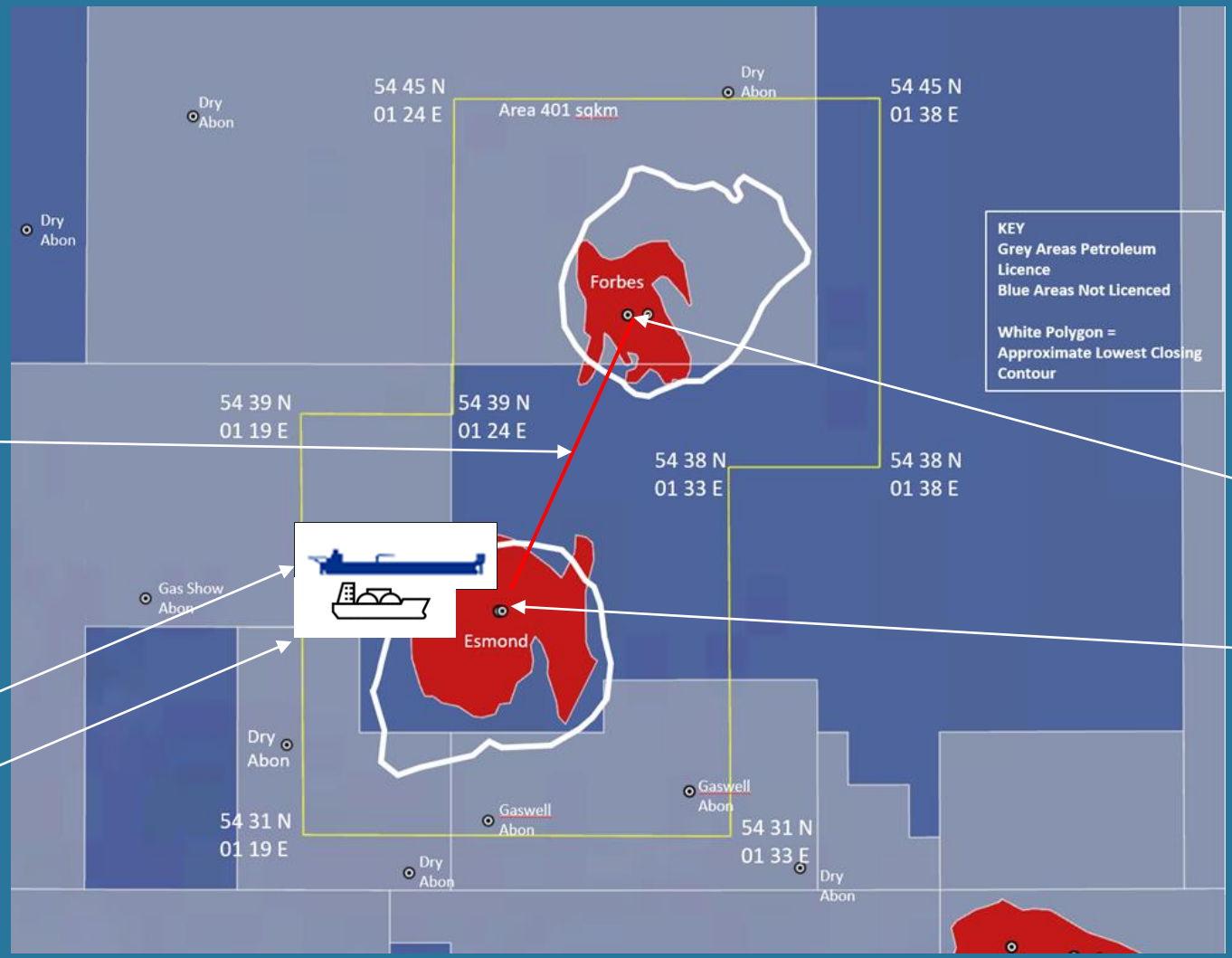
Umbilical pipeline

CO_2 injection Forbes / Esmond Subsea manifolds

Key Assumptions

- Average CCGT CO_2 emissions of 371 metric tons per GWh
- In-situ CO_2 capture and liquefaction – liquid CO_2 maintained at -41°C and 9.8 bar through to wellhead
- Transport by sea tanker to FISO at Esmond / Forbes
- FISO incorporating CO_2 offloading from sea tanker, CO_2 storage and pumping facilities
- Esmond / Forbes CO_2 injection wells with subsea manifolds

Esmond / Forbes sequestration



Interconnecting pipeline

FISO

CO_2 tanker

Forbes subsea manifold

Esmond subsea manifold

Damhead, Medway & Grain 3077 MW CCGT CCS

CCGT Peak capacity, MW	3077
CO_2 emissions, tonnes per GWH	371
CO_2 emissions, tonnes per hour	1,142
CO_2 emissions per day, tonnes	27,398
CO_2 emissions per day, 80% load, 95% recovery, tonnes	20,822
Net CO_2 emissions per year, tonnes	7,600,096
Gaseous CO_2 emissions per day, m^3	11,577,133
Liquid CO_2 emissions per day, m^3	18,532

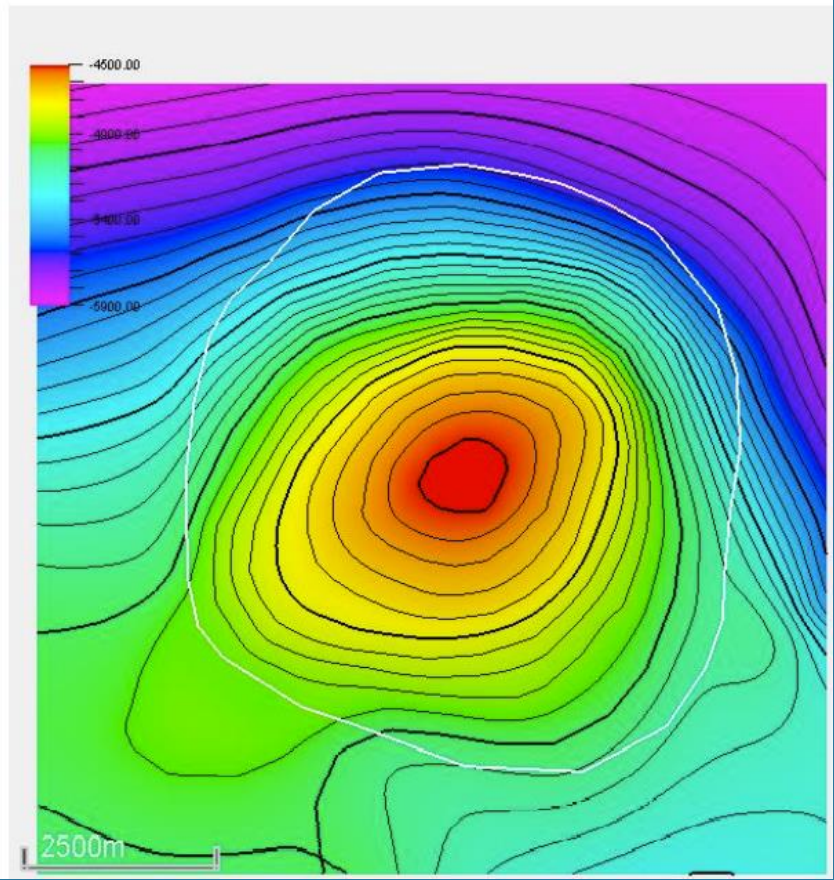
*1 ton CO_2 = 556 m^3 at 25°C and atmospheric pressure

*At -41 °C and 9.8 bar, 1m^3 CO_2 = 1119 kg

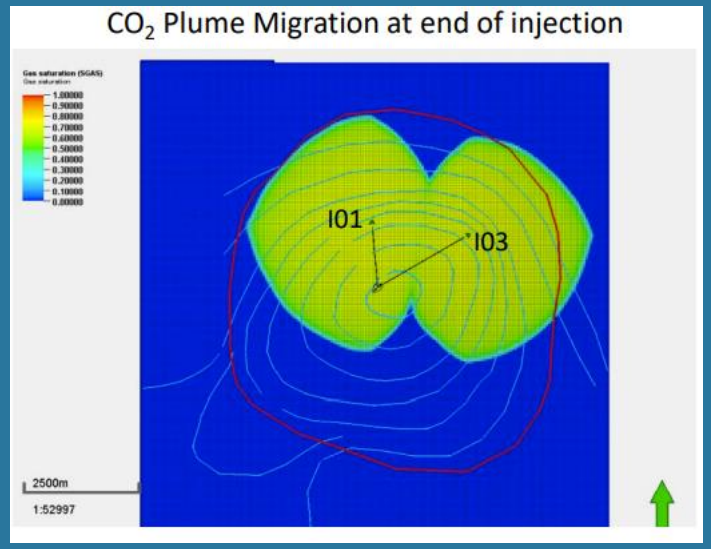
Esmond & Forbes CO_2 Storage Reservoirs

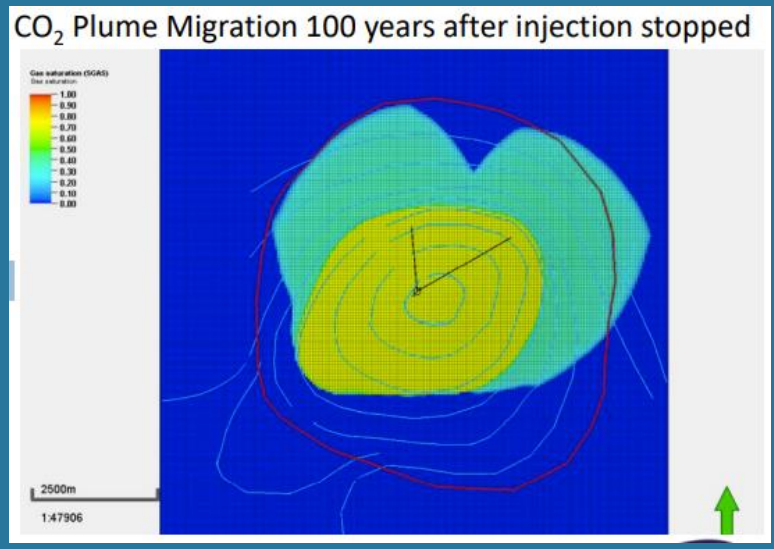
- Both Esmond and Forbes well known and heavily studied by Oilex personnel
- Bunter sandstone reservoirs with excellent permeability and porosity and structural containment
- Oilex have pending CCS licence application with OGA
- Esmond subject to pre-FEED study by Axis – reservoir modelled using Eclipse with 100 year simulation confirming containment of CO_2 within structure, 1 mmTa per well injection rates and 50 million tonnes CO_2 storage capacity

Esmond CO_2 Storage Reservoir – Axis pre-FEED

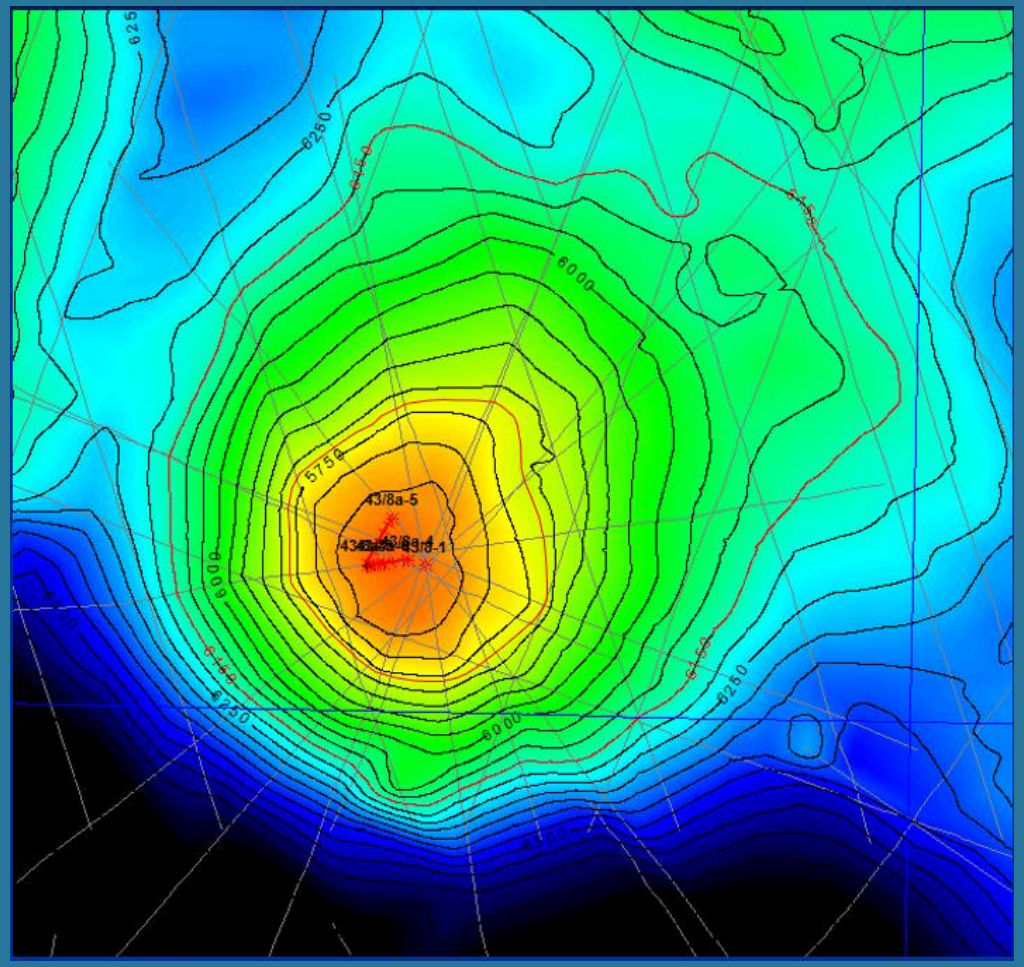


- Storage Plan Model:
  - 50 MT injected over 25 years
  - 2 MT/yr
  - 2 wells modelled
  - Numerous sensitivities were run ; 50MT can safely be injected and stored in the structure.





Forbes CO_2 Storage Reservoir



Forbes depth structure map at top of Bunter SST

- CO_2 sequestration capacity c. 2.4 TCF
- Excellent structural integrity
- Reservoir pressure c. 2500 psi – suited to dense phase CO_2 injection
- Substantial CO_2 capacity (118 MT)
- Close proximity to Esmond