# Bio$CO_2$ access to HyNet and CCS clusters

## Project Development Opportunities

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# Agenda

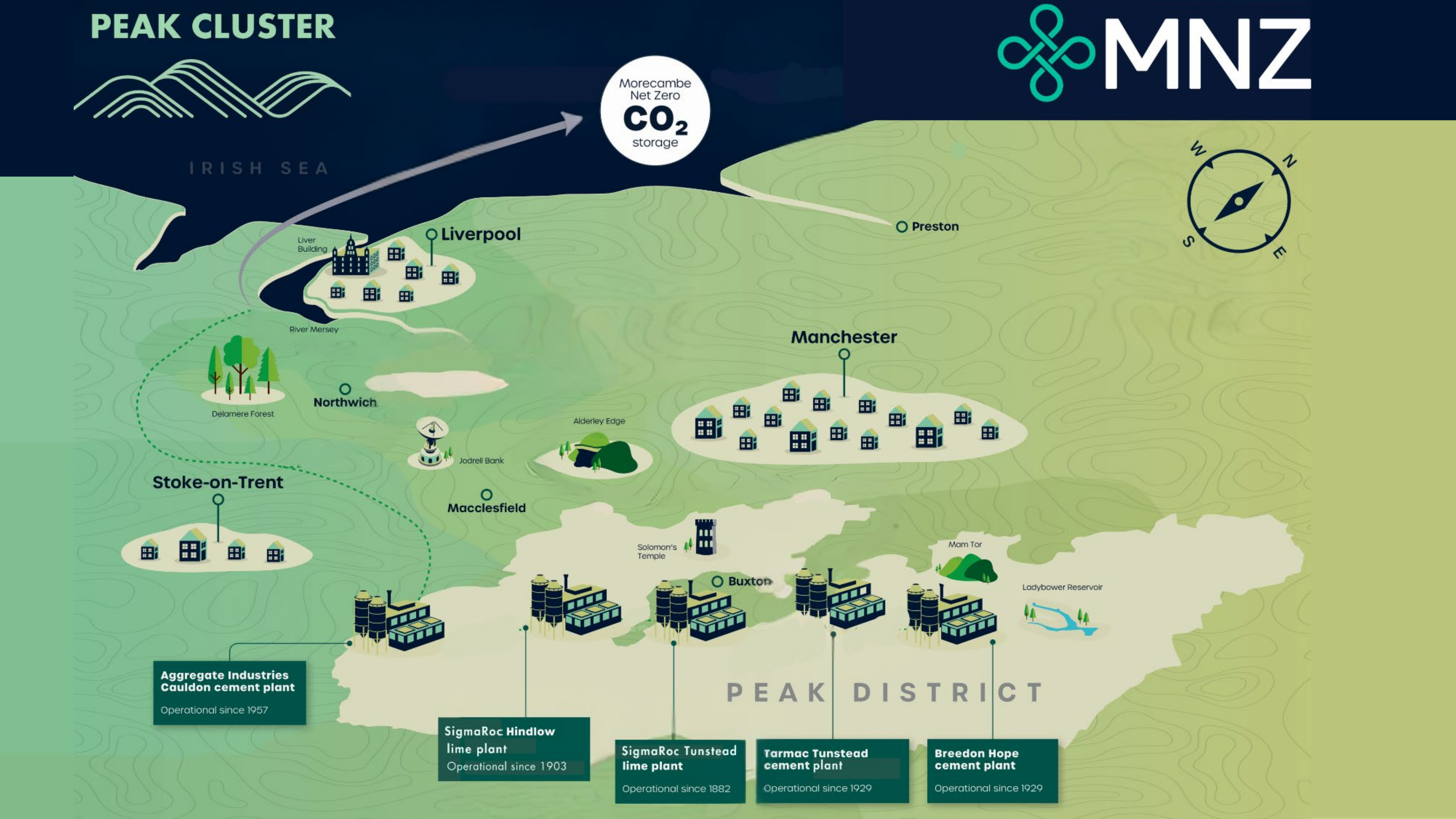
- Progressive Energy
- $CO_2$ Storage Industry
- Competing Sources of Low Carbon $CO_2$
- Selling the Credits
- GGR business model
- Non-pipeline transport
- Progressive Expertise

# Progressive Energy

- A low carbon energy project development and consultancy company formed in 1998
- Originator and lead developer of multiple large decarbonisation projects, including HyNet
- Developing several projects in the carbon dioxide removal market

# $CO_2$ Storage Industry


- Well regulated and organised
- RAV model for transport and sequestration networks
- Hynet and East Coast Cluster under construction
- Timelines for other clusters unclear
- Capacity can only be allocated by Government



PEAK CLUSTER
MNZ
Morecambe Net Zero $CO_2$ storage
IRISH SEA
Liver Building
Liverpool
Preston
River Mersey
Manchester
Delamere Forest
Northwich
Jodrell Bank
Alderley Edge
Stoke-on-Trent
Macclesfield
Solomon's Temple
Mam Tor
Buxton
Ladybower Reservoir
PEAK DISTRICT
Aggregate Industries Cauldon cement plant
Operational since 1957
SigmaRoc Hindlow lime plant
Operational since 1903
SigmaRoc Tunstead lime plant
Operational since 1882
Tarmac Tunstead cement plant
Operational since 1929
Breedon Hope cement plant
Operational since 1929
W N S E

# Competing Source of Low Carbon $CO_2$

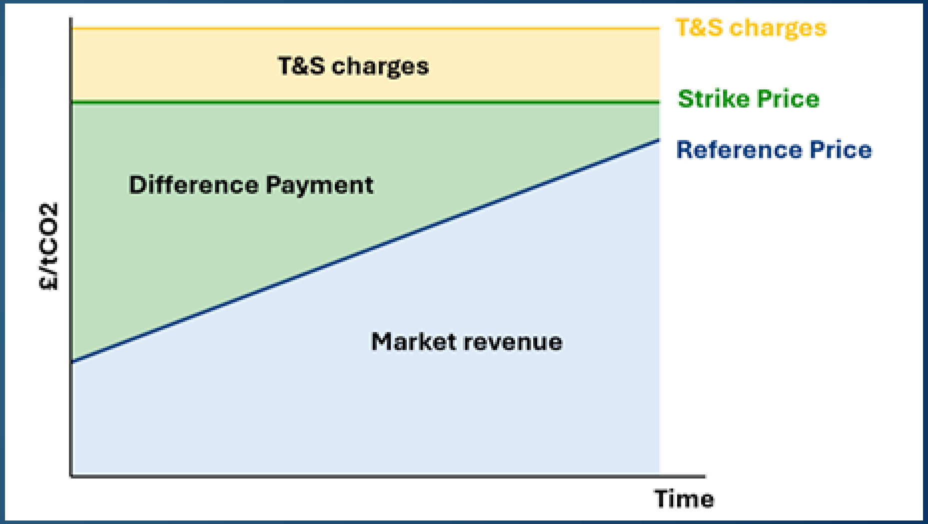
- AD has low cost of capture but highly distributed
- Biomass power plants have higher cost of capture but are more concentrated
- DAC is expensive but highly scalable
- Net removal, sustainability and counterparty risk are all important

# Selling the Credits

- Fairly active voluntary markets for negative emissions
- Long term fixed price off-take agreements
- GGR business model will give revenue certainty and possibly grant funding
- Allocation process is unclear
- ETS to be expanded to include credits
- 2030 ETS forecasts are £80-£200/tonne. Very sensitive to policy.
- Voluntary market feedback is $200-$250/tonne

# GGR Business Model

- 15-year contract for difference (CfD) with strike price set through bilateral agreement.
- Reference price set by achieved market price with 5% incentive for emitter.
- T&S charges passed through contract and guarantees provided on T&S network availability.
- GGR must meet UK government standards and feedstocks must meet sustainability standards – both under development.
- Evero and Climeworks awarded initial contracts and offered 50% grant on costs.
- No detail on further allocations yet.



# Non-Pipeline Transport

Capture Plant → Liquefaction → NPT Transport → Aggregation Facility → Onshore Pipeline → Offshore Storage

- AD will require transport of liquefied $CO_2$ from the AD plant to a regasification facility before injection into the transport and sequestration plant
- Government has refused to allocation T&S network capacity to pipeline projects in the past
- Consulting in November on how non-pipeline transport will be dealt with

# Progressive Expertise

- Progressive have been very successful in developing fossil fuel carbon capture
- We have a good understanding of:
  - Transport and sequestration networks
  - $CO_2$ standards
  - Carbon credit markets
  - T&S allocation
  - Sustainability and LCA
  - Monitoring, verification and reporting
  - Capture, liquefaction, transport and regasification
- We are seeking companies to work with on the sequestration of AD $CO_2$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# Thank You

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