

# CUMBRIA

## LEADING THE WAY TO NET ZERO



## Welcome & Introductions

Jo Lappin  
Chief Executive  
CLEP



## The Leaders' Perspectives



## The Leaders' Perspectives

Jonathan Brook

Leader Westmorland & Furness





Westmorland & Furness Council

Our vision for Westmorland and Furness is to be:

“A great place to live, work and thrive.”

Cllr Jonathan Brook, Leader



[westmorlandandfurness.gov.uk](http://westmorlandandfurness.gov.uk)



## The Leaders' Perspectives

Lisa Brown

Deputy Leader

Cumberland



## The Leaders' Perspectives

Lord Inglewood

Chair Cumbria Local Enterprise Partnership



# CUMBRIA

LEADING THE WAY TO NET ZERO

## Leaders Q&A Session



## The Role of Cumbrian Ports in Supporting Net Zero



## The Role of Cumbrian Ports in Supporting Net Zero

Bryan Davies

North-West Divisional Port Manager, Associated British Ports





Port of Barrow – Cumbria Net Zero Event  
11<sup>th</sup> September 2023

Bryan Davies, Divisional Port Manager, North West & Scotland

[bryan.davies@abports.co.uk](mailto:bryan.davies@abports.co.uk)

# Investing in Tomorrow



Marina Wyatt  
Chief Financial Officer

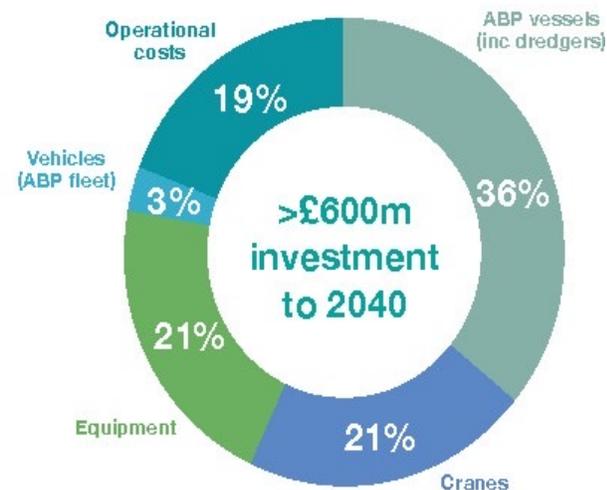
We plan to invest around **£2bn** in decarbonising our own operations and commercial infrastructure projects. We know our investment is affordable and we can deliver it.

**Our approach to sustainability is credible, fact-based and transparent.**

To make our sustainable future a reality, we need to back our vision with sound financial investment. That is why we have gone through the process of evaluating different scenarios, which allows us to plan for significant investments with confidence.

But the most important investment ABP can make is in our people and their skills. This will be delivered in large part by the ABP Academy, our in-house training provider, which is IEMA-approved, so that our colleagues feel confident and empowered to deliver the improvements needed to make our business more sustainable.

Figure: ABP's Investment in Decarbonising our Operations



Ready for  
**Tomorrow**  
ABP Sustainability  
Strategy



ABP is investing around **£2bn** in green infrastructure and equipment with:

🕒 **£600m** to decarbonise our own infrastructure and equipment between now and 2040  
(see chart for breakdown)

🕒 **£1.4bn** in infrastructure and facilities supporting customers involved in the energy transition.



An energy and industrial revolution is gathering pace. It will shape Barrow's future



# The Port of Barrow

Securing the future in a changing world

# UK defence

The port is a key partner in maintaining the UK's defence capability



## Offshore wind

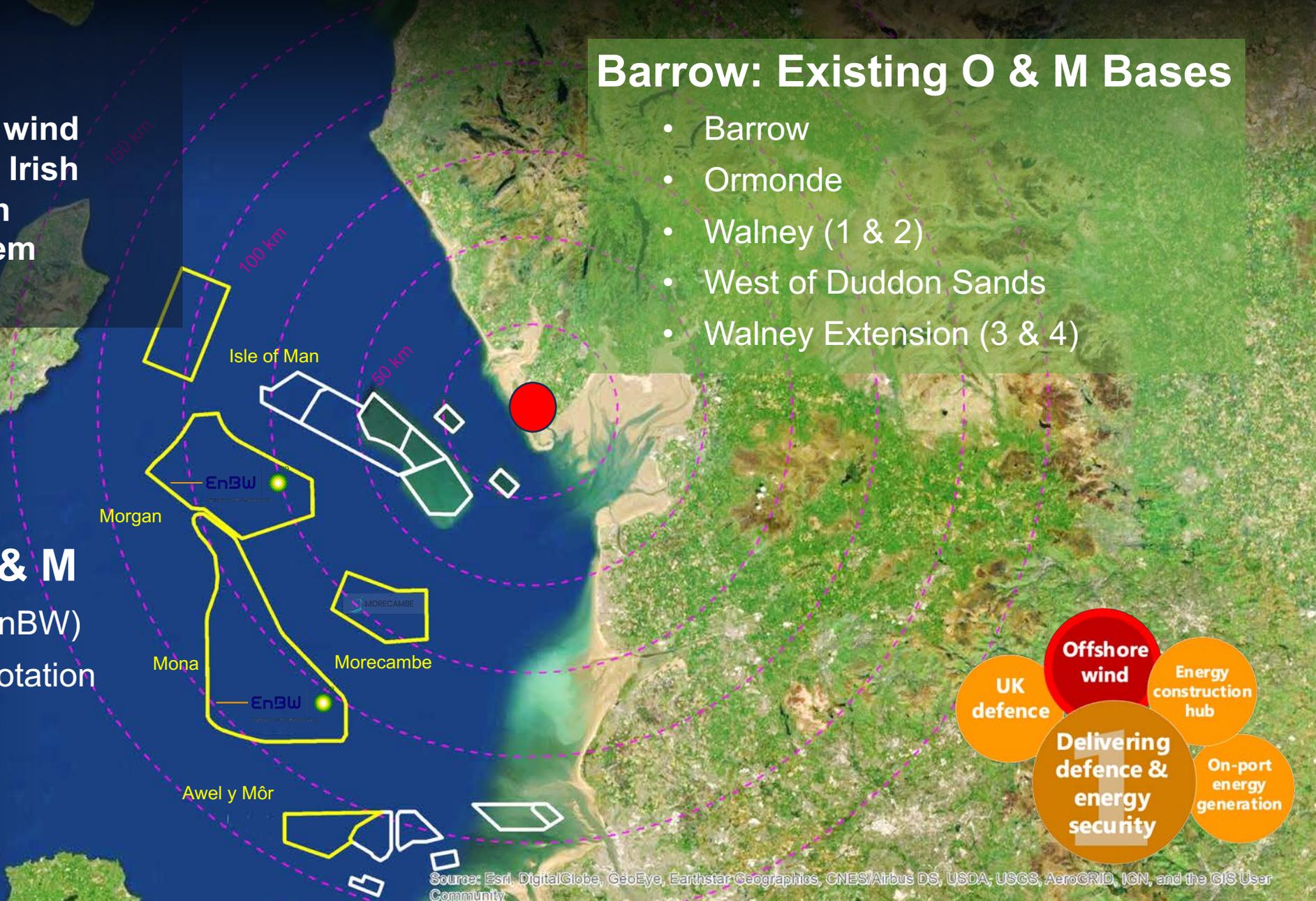
Hundreds of new offshore wind turbines are coming to the Irish Sea. The Port will invest in facilities that help keep them operating at their peak

## Potential Future O & M

- Morgan & Mona (bp & EnBW)
- Morecambe (Cobra & Flotation Energy)

## Barrow: Existing O & M Bases

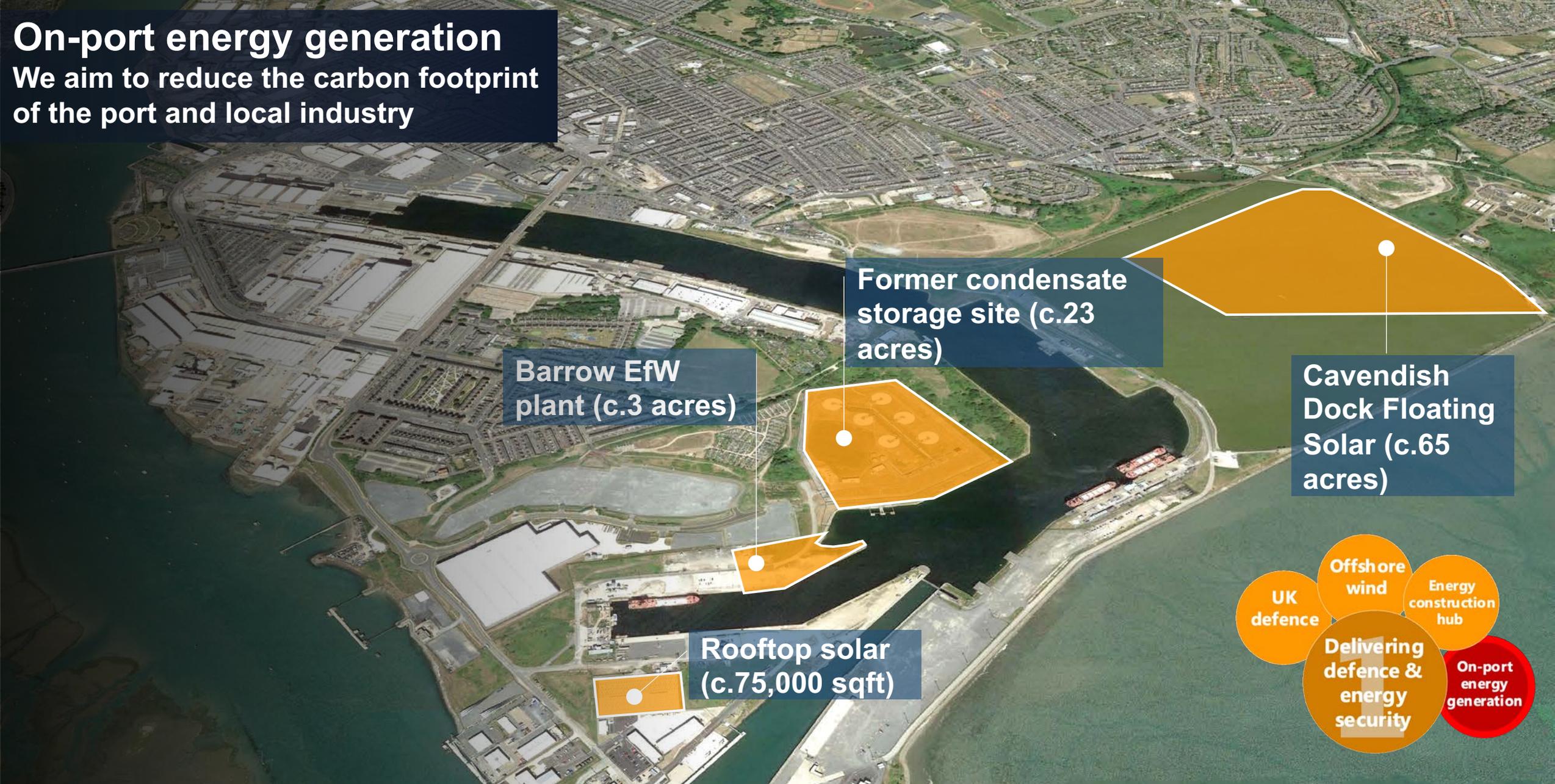
- Barrow
- Ormonde
- Walney (1 & 2)
- West of Duddon Sands
- Walney Extension (3 & 4)



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

# On-port energy generation

We aim to reduce the carbon footprint of the port and local industry



Former condensate storage site (c.23 acres)

Barrow EfW plant (c.3 acres)

Cavendish Dock Floating Solar (c.65 acres)

Rooftop solar (c.75,000 sqft)



# Carbon dioxide storage

The port will become a key UK asset in sequestering CO<sub>2</sub> from hard-to-decarbonise industrial processes



CO<sub>2</sub> vessel berthing jetty



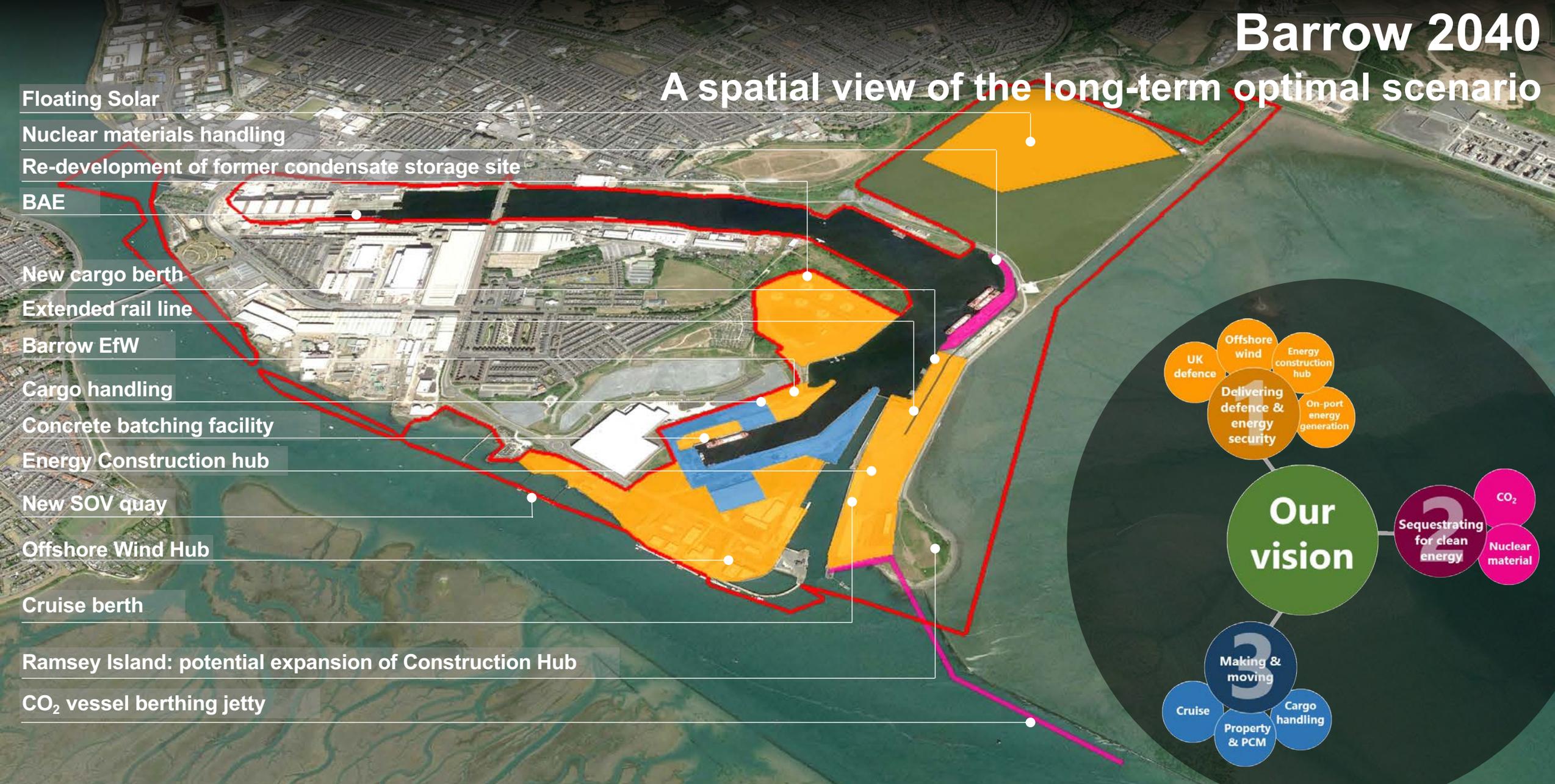
# Cargo handling

The port will continue to serve local industry by facilitating maritime trade

Cargo handling  
(c.16 acres)



## A spatial view of the long-term optimal scenario



# Cumbria: Let's work together

More info at  
[www.abports.co.uk/locations/barrow](http://www.abports.co.uk/locations/barrow)



## The Role of Cumbrian Ports in Supporting Net Zero

Sven Richards  
Port Manager, Port of Workington



# Port of Workington

## Supporting Net Zero



Health and wellbeing is  
at the heart of everything we do

Our values



Ambitious



Collaborative



Compassionate



Empowering



Innovative

# Port in context

- Cumberland Council own and operate the Port and has statutory powers and duties as the Harbour Authority under the Workington Harbour Act.
- The Port's landward boundary on the north side of the River Derwent encompasses the commercial dock (Prince of Wales Dock) and has an operational area of approximately 50 acres.
- The Port handles around 300,000 m/tonnes of cargo annually, with about 250 cargo vessel movements. This consists of the following cargos, pulp, wood, cement, pipes, waste products (tyres) project cargo.



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# Port in context

- The Port of Workington is the home of the Robin Rigg windfarm operations and maintenance base.
- The Port's principal cargo handling facilities are centred around the Prince of Wales Dock. This enclosed dock has a total water area of 2.6 hectares and quay frontage of 773m providing 7 Berths and a Ro-Ro berth.
- The Port also offers Rail Freight services via its main line rail connection. All berths at the Port are rail-served, and the Port Authority operates its own locomotives on the Port's extensive internal rail system.



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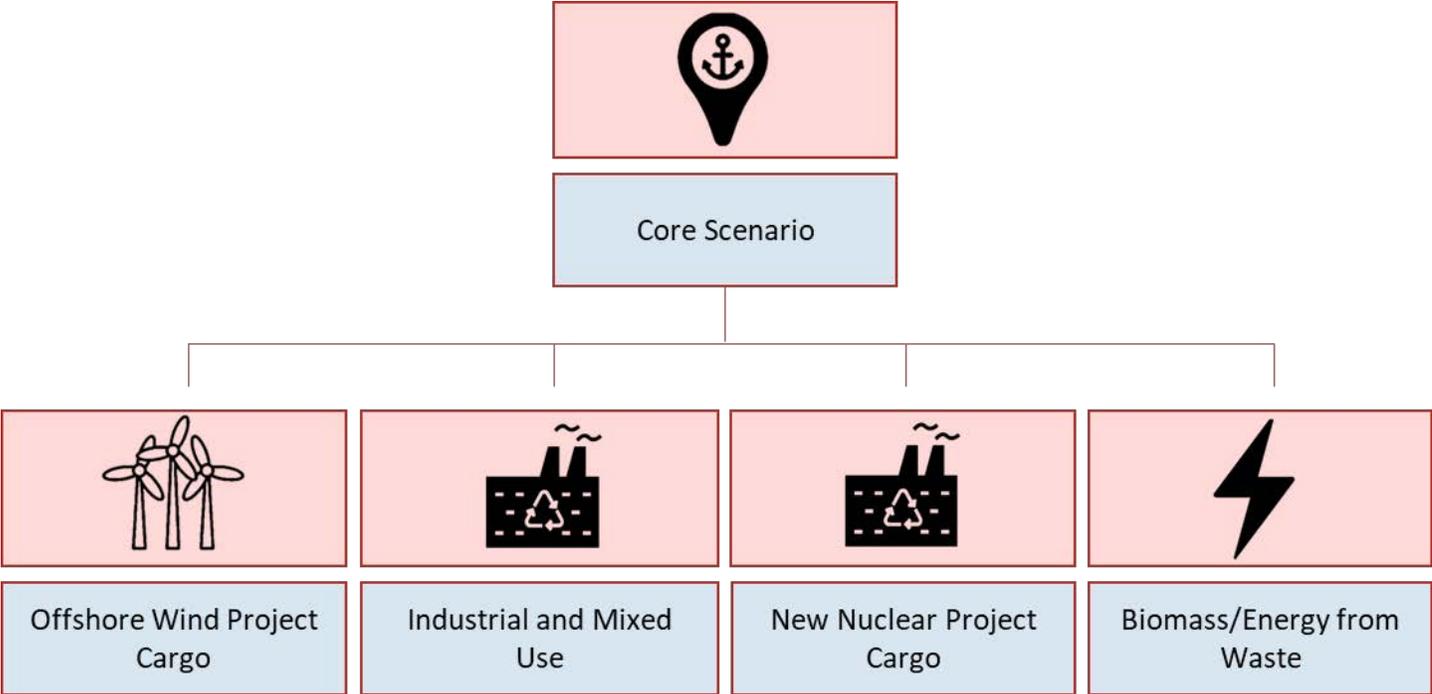


Empowering



Innovative

# Port Masterplan



**Health and wellbeing is at the heart of everything we do**

**Our values**

- Ambitious
- Collaborative
- Compassionate
- Empowering
- Innovative

# Core Scenario

## Uplift in Traffic

- Bulk Storage (2 & 3)
- Rail-side laydown (4)

## Other Features

- New Warehouse (1)
- New rail run-around north of the Dock (5)
- Potential for small vessel maintenance (6)
- Log Storage (7)
- Opportunity for future expansion or cargo consolidation (8)
- Potential Renewables Area (9)



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# Future Scenarios

- Consolidation area (1)
- Consolidation area (2)
- Old side development site (3)
- Old side development site (4)
- Site remediation



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# Port Of Workington Supporting Net Zero

## What is the Port of Workington doing now

- Moving towards net Zero
  - Energy Generation
  - Electrification
  - Alternative fuels as an interim measure (HVO)
- The Port Workington hosts an operations and maintenance base for the Robin Rigg wind farm and has capacity to support further development by using the land around it.
- Intermodal HUB
  - Improved road and rail connectivity makes The Port of Workington an intermodal hub.



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# Port Of Workington Supporting Net Zero

## Other opportunities to support Net Zero



- New offshore wind projects



- Shore power connection



- Carbon capture



- Promote Modal Shift



- Support the transition to Alternative fuels,



- Play a part in the Circular Economy



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Collaborative



Compassionate



Empowering



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# Collaboration



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Our values



Ambitious



Collaborative



Compassionate



Empowering



Innovative

# CUMBRIA

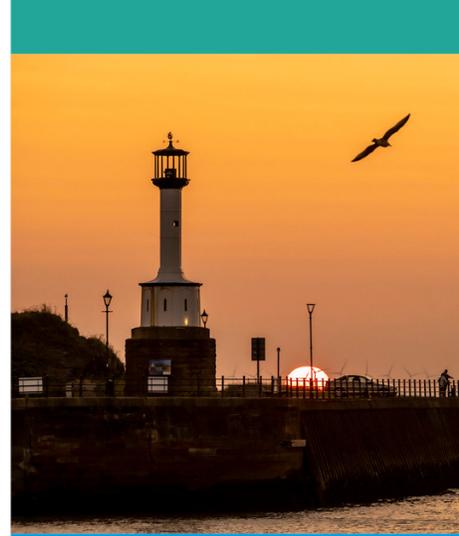
LEADING THE WAY TO NET ZERO

## Q&A Session



## Delivering Net Zero –

## The National and Regional Policy Perspective



## Delivering Net Zero

## The National and Regional Policy Perspective

George Robinson

Department of Energy, Security & Net Zero  
District Heat Lead





Department for  
Energy Security  
& Net Zero

# Leading the way to Net Zero

Local Government as a core enabler of Net Zero outcomes.

# National Context

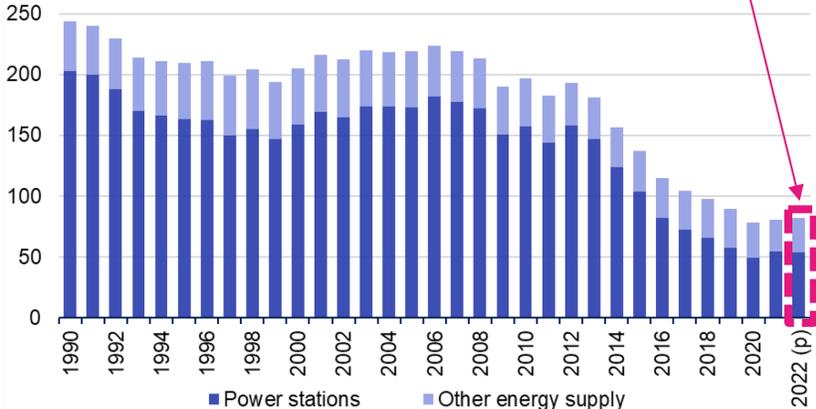
UK annual national emissions if pressurised to 120bar and stored in canisters would fill Wembley stadium approximately 75 times, or the equivalent of planting trees covering the surface area of England 9 times\*.

- **Energy Supply:** gas fired power stations primary contribution to UK emissions following decade of decarbonisation and switch from coal;
- **Business:** includes agricultural and industrial processes as well as commercial building heating and cooling
- **Transport:** combustion of petroleum-based fuels on UK roads are the key contributors to these emissions
- **Residential:** primarily this relates to the combustion of gas for domestic heating and hot water

Committee on Climate Change (CCC) 6<sup>th</sup> carbon budget [report](#) makes clear that to meet our Net Zero target it will require a major nationwide investment programme, led by Government, but largely funded and delivered by private companies and individuals.

	2021 (MtCO <sub>2</sub> )	2022 (MtCO <sub>2</sub> )	2021 - 2022 Percentage change
Energy supply	81.4	86.4	6.2%
Business	64.9	64.1	-1.2%
Transport	108.4	112.5	3.8%
Public	7.6	8.2	8.0%
Residential	68.6	63.9	-6.8%
Other	10.8	10.9	1.0%
<b>Total CO<sub>2</sub></b>	<b>341.5</b>	<b>346.0</b>	<b>1.3%</b>

[UK weather adjusted UK national greenhouse gas emissions 2021 and 2022](#)



\*Gas example assumes 2,200L of CO<sub>2</sub> at atmospheric pressure would compress to 0.0035M<sup>3</sup> at 120 bar of pressure. For tree coverage this takes the [IPCC estimate](#) of between 1.5-4.5TCO<sub>2</sub>/ha/year sequestration potential of new forest in temperate region. England is approximately 13m hectares.

# Local Government and Private sector roles

- Local Government plays and will continue to play an essential role in driving local climate action across energy, housing and transport;
- Net Zero Strategy and Net Zero Growth Plan recognise this and set out support including:
  - Local Net Zero Forum to bring together national and local government senior officials
  - Funding five Local Net Zero Hubs
  - Funding work to develop business models to increase private sector investment in local net zero
  - Using devolution deals with Greater Manchester Combined Authority and West Midlands Combined Authority to pilot new approaches to funding retrofit from 2025
  - Making Green business sectors one of the 5 priority areas for new Investment Zones announced in the Budget
  - Also supporting community energy projects with new £10m Community Energy Fund targeting rural and urban communities across England

However, Local Government and National Government have limited resources. Current Local Government borrowing levels are at £96bn with a capped borrowing level of £115bn. CCC estimates approximately £50bn of annual investment by 2035 to meet targets: public – private partnerships will need to play an increasing role in our approach to Net Zero.

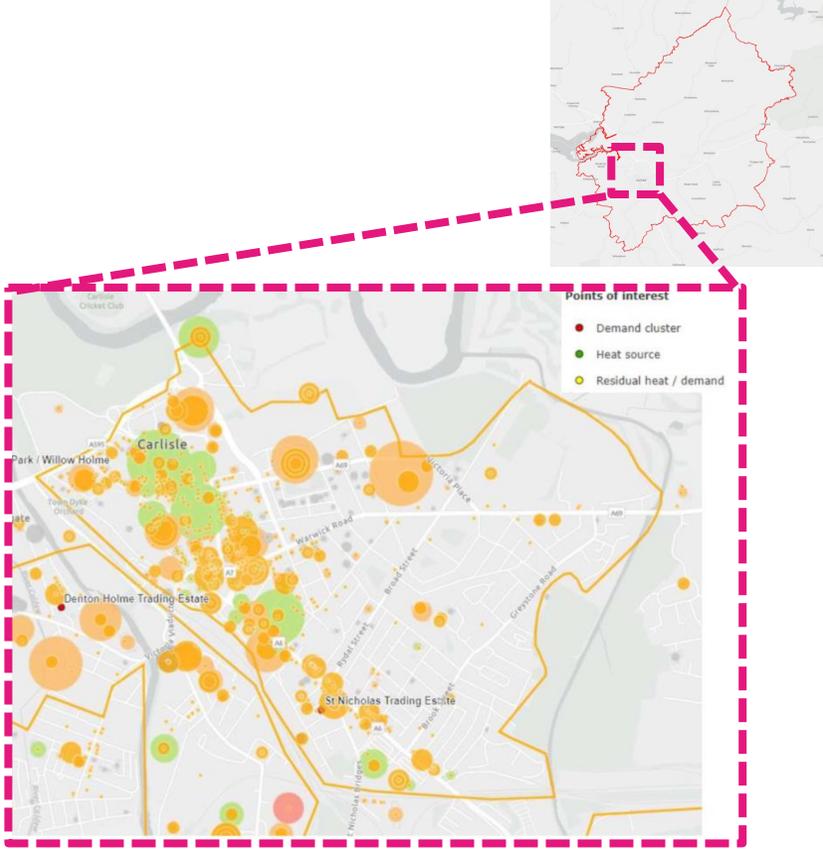
	Note	2023 £m
<b>Assets</b>		
Cash and balances at bank		130
Loans	4, 5	96,245
<b>Total assets</b>		<b>96,375</b>

HM Treasury has subsequently enacted via statutory instrument section 112 of the Finance Act 2020, on 12 May 2022, amending the National Loans Act 1968 to increase the overall PWLB lending limit from £95 billion to £115 billion.

[Public Works Loan Board 2023 Accounts and Annual Report](#)

# Carlisle as example of heat decarbonization opportunities

- Heat Network Zoning (2025) will introduce Heat Network zones in England. Local Authorities will be able to designate zones that will require buildings of a certain size (currently >100MWh/year of heat demand) to connect to a heat network.
- January 2022 the Department (then BEIS) commenced a Heat Network Zoning Pilot Programme in 28 English cities and towns, including Carlisle.
- A number of potential areas were identified in Carlisle for heat network zones, the most promising of which could be the area north of the train station and south of Bitts park with space heating of 141GWh identified of which 70% would be expected to be required to connect to a heat network under [legislation](#) currently in parliament.
- The CO2e associated with heating these buildings would require the equivalent of covering 2% of Cumbria with additional forest (approximately 33 thousand tonnes of CO2e per year).
- This project, and many others like it, will need Local Authority sponsors to work with the private sector to deliver a low carbon heating solution that is cost effective to customers while providing a return to investors.



Heat demand of North of train station	Number of buildings	Total heat demand	Space heating	Hot tap water	Heat demand >100 MWh
Category	#	MWh	MWh	MWh	MWh
Domestic demand	3,096	39,501	31,600	7,900	150
Commercial Demand	620	77,995	74,095	3,900	62,561
Publicly owned buildings demand	64	37,280	35,416	1,864	36,724
<b>Total</b>	<b>3,780</b>	<b>154,776</b>	<b>141,112</b>	<b>13,664</b>	<b>99,436</b>

Heatina demand based off estimations from CIBSE (EPC data) or actual gas consumption (DEC data). – Draft version

## Contact details / QA



Department for  
Energy Security  
& Net Zero

George Robinson  
Head of Finance and Investment, Heat Networks  
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1 Victoria Street London SW1H 0ET  
[www.gov.uk/beis](http://www.gov.uk/beis) | [twitter.com/beisgovuk](https://twitter.com/beisgovuk)

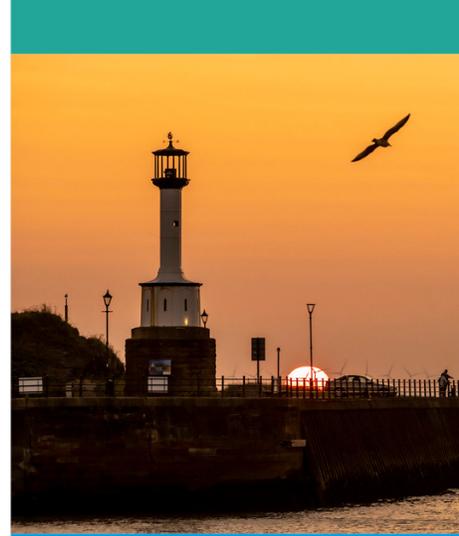


Department for  
Energy Security  
& Net Zero

## Delivering Net Zero

## The National and Regional Policy Perspective

Eddie Boyd  
North West Net Zero Hub





# CUMBRIA NET ZERO EVENT

11<sup>th</sup> September 2023



Department for  
Energy Security  
& Net Zero



**NORTH WEST**  
**ROUTE TO NET ZERO**



**NORTH WEST  
ROUTE TO NET ZERO**



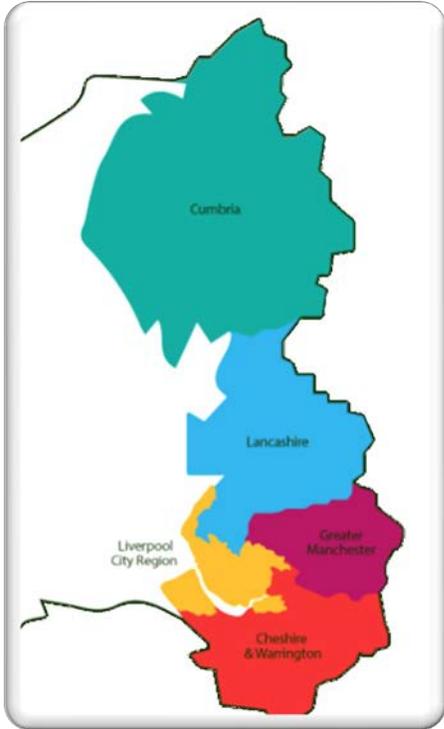
Lancashire  
Enterprise Partnership



**LIVERPOOL  
CITY REGION**  
COMBINED AUTHORITY

**GMCA** GREATER  
MANCHESTER  
COMBINED  
AUTHORITY

 Cheshire and Warrington  
Local Enterprise Partnership



**Net Zero  
Strategy & Policy**

**Technical  
Assistance  
(Sector Leads)**

**Capital Projects  
and Investment  
(Regional Leads)**

**Engagement &  
Knowledge  
Transfer**

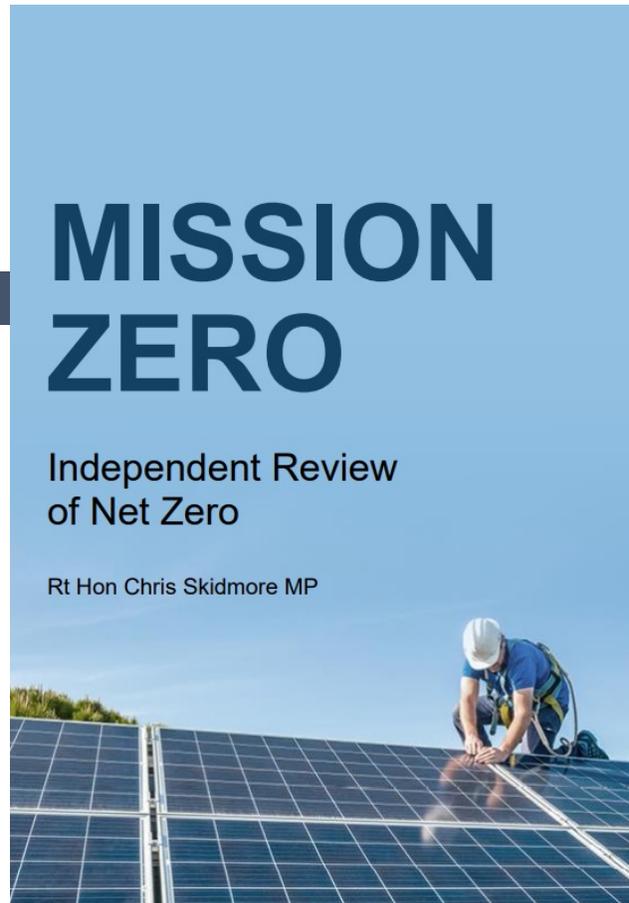
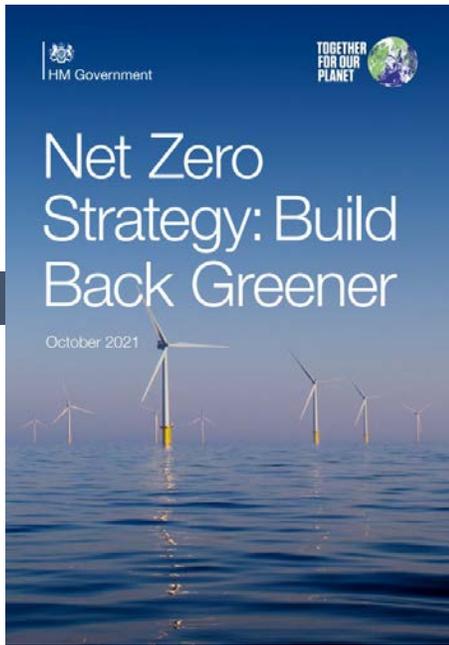
**Community  
Energy**

**Green Finance**



Department for  
Energy Security  
& Net Zero



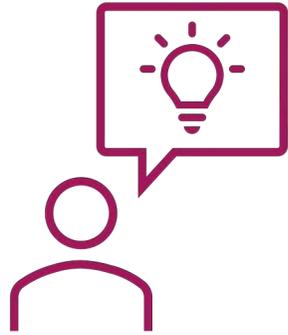




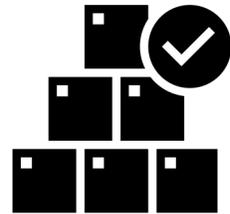
# TECHNICAL SUPPORT PROGRAMME



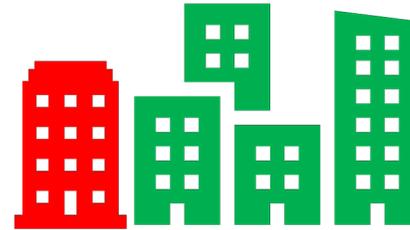
# Objectives for Intervention on Buildings



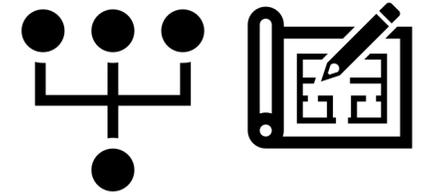
Knowledge Exchange



Best Practice  
Information Hub



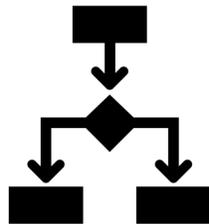
Estates Analysis and  
Project Identification



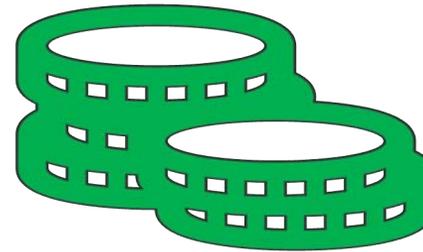
Transition Project  
Planning



Specialist Support



Procurement Advice  
Opportunity Mapping



Green Financing Options



Collaboration

A Credible, Competent Capacity to Support Net Zero Transition



## Local energy made easier

**Net Zero Go** is a unique, powerful, easy-to-use platform bringing together all the tools and support that local authorities need to develop successful, locally-focused zero carbon projects, taking initiatives from a standing start to operational and beyond.

With over 80% of councils in the UK now “declaring a climate emergency”, Net Zero Go has been launched to tackle many of the common barriers to action, such as time and resource, financing and procurement, and local energy knowhow.

Net Zero Go was co-developed with local authorities and draws on a range of experience and expertise from leaders in local energy and investors, including UK Research and Innovation, Innovate UK, BEIS, UK Energy Hubs, APSE, Anthesis, Ashden, Cornwall Insights, EnergyRev, Local Partnerships, UK100, the Local Government Association, the Green Finance Institute, HM Treasury, and the UK Infrastructure Bank.

Get started with limited access or **register free** for a Net Zero Go’s full suite of features.



# NEW COMMUNITY ENERGY FUND

Launching Autumn 2023

Email enquires

[NWNZHub@liverpoolcityregion-ca.gov.uk](mailto:NWNZHub@liverpoolcityregion-ca.gov.uk)



# NAVIGATE TO CASE STUDIES

[www.nwroutetonetzero.com](http://www.nwroutetonetzero.com)

Location:  All Locations  Cheshire & Warrington  Cumbria  Greater Manchester  Lancashire  Liverpool City Region

Category:  All Categories  Built Environment  Circular Economy  Energy  Finance  Green Skills  Industry  Land & Biodiversity  Transport  Waste



## WORKINGTON PAPERBOARD MILL - BIOMASS COMBINED HEAT & POWER

- Energy
- Circular Economy
- Waste



## SHED 1 DISTILLERY: A CARBON POSITIVE ENTERPRISE

- Waste
- Cumbria, Ulverston

Shed 1 Distillery, a climate-positive enterprise placing sustainability at the heart of their



## DARK SKIES CUMBRIA

- Land & Biodiversity

Cumbria County Council are protecting Dark Skies and reducing carbon emissions with innovative LED lighting

[Read Full Story...](#)

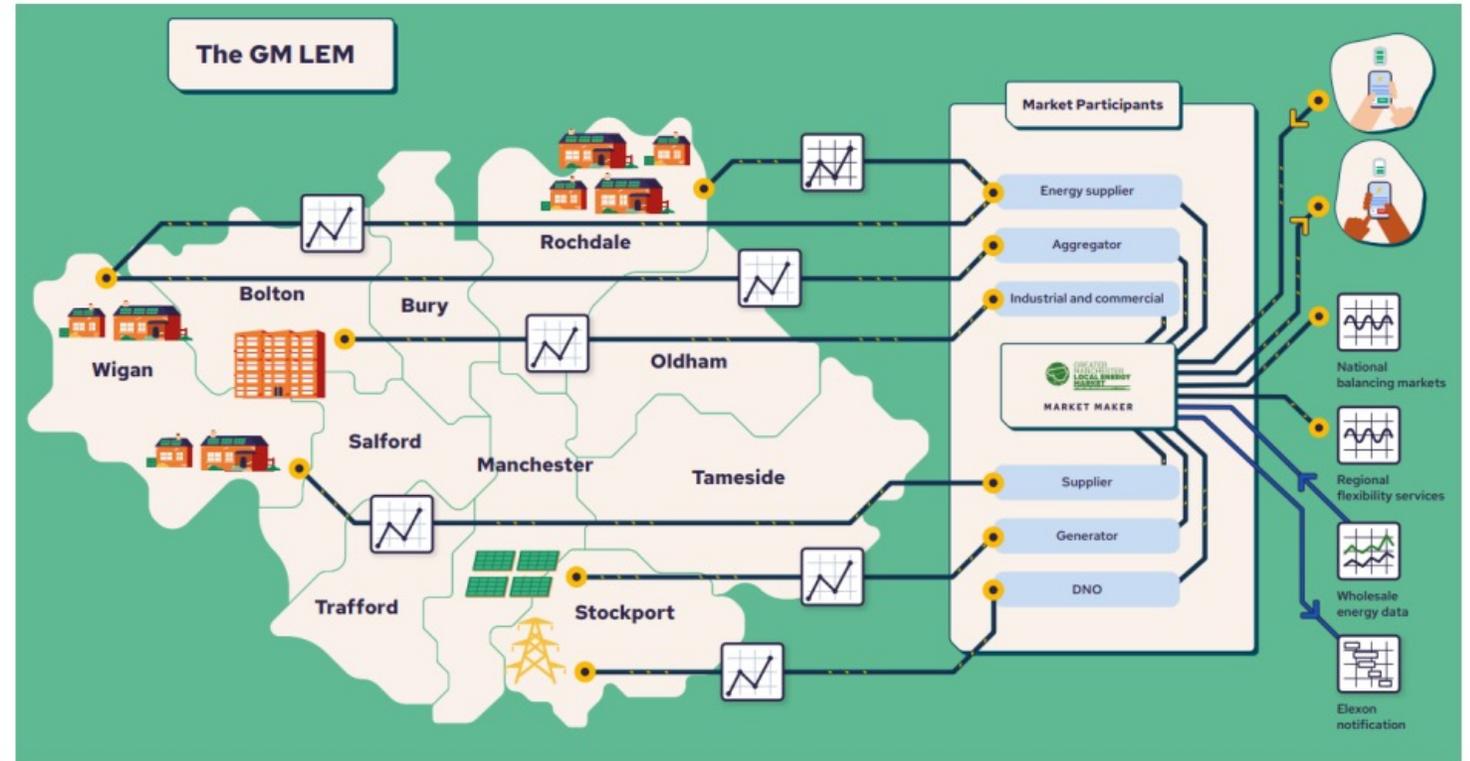
# Carbon Stories



**NORTH WEST**  
**ROUTE TO NET ZERO**

# Local Energy Markets (LEM)/ Local Area Energy Planning

Greater Manchester



Greater Manchester is leading nationally on energy masterplanning. GM has developed local area energy development plans for each of its districts, engaging communities on their options to decarbonise. It has developed a pioneering approach to local energy markets which would allow organisations to share energy and avoid grid charges and reduce grid reinforcement costs.



north west  
net zero hub

Contact the **North West Net Zero Hub**

❑ **Email**

[NWNZHub@liverpoolcityregion-ca.gov.uk](mailto:NWNZHub@liverpoolcityregion-ca.gov.uk)

❑ **Linkedin**

[www.linkedin.com/company/north-west-net-zero-hub/](https://www.linkedin.com/company/north-west-net-zero-hub/)

❑ **Route to Net Zero – Join Us**

[NW Route To Net Zero | Join – NW Route To Net Zero](#)

## Delivering Net Zero

## A Cumbrian Perspective

Cllr Giles Archibald

Westmorland & Furness Cabinet Member for  
Climate and Biodiversity

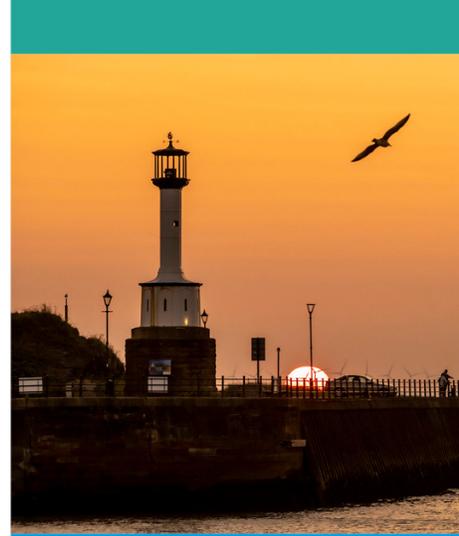


## Delivering Net Zero

## A Cumbrian Perspective

Bob Kelly

Cumberlnd Executive Member, Policy & Regulatory Services



## Delivering Net Zero

## A Cumbrian Perspective

Karen Mitchell

Chief Executive

Cumbria Action for Sustainability & Co Chair Zero

Carbon Cumbria Partnership



# CUMBRIA

LEAD

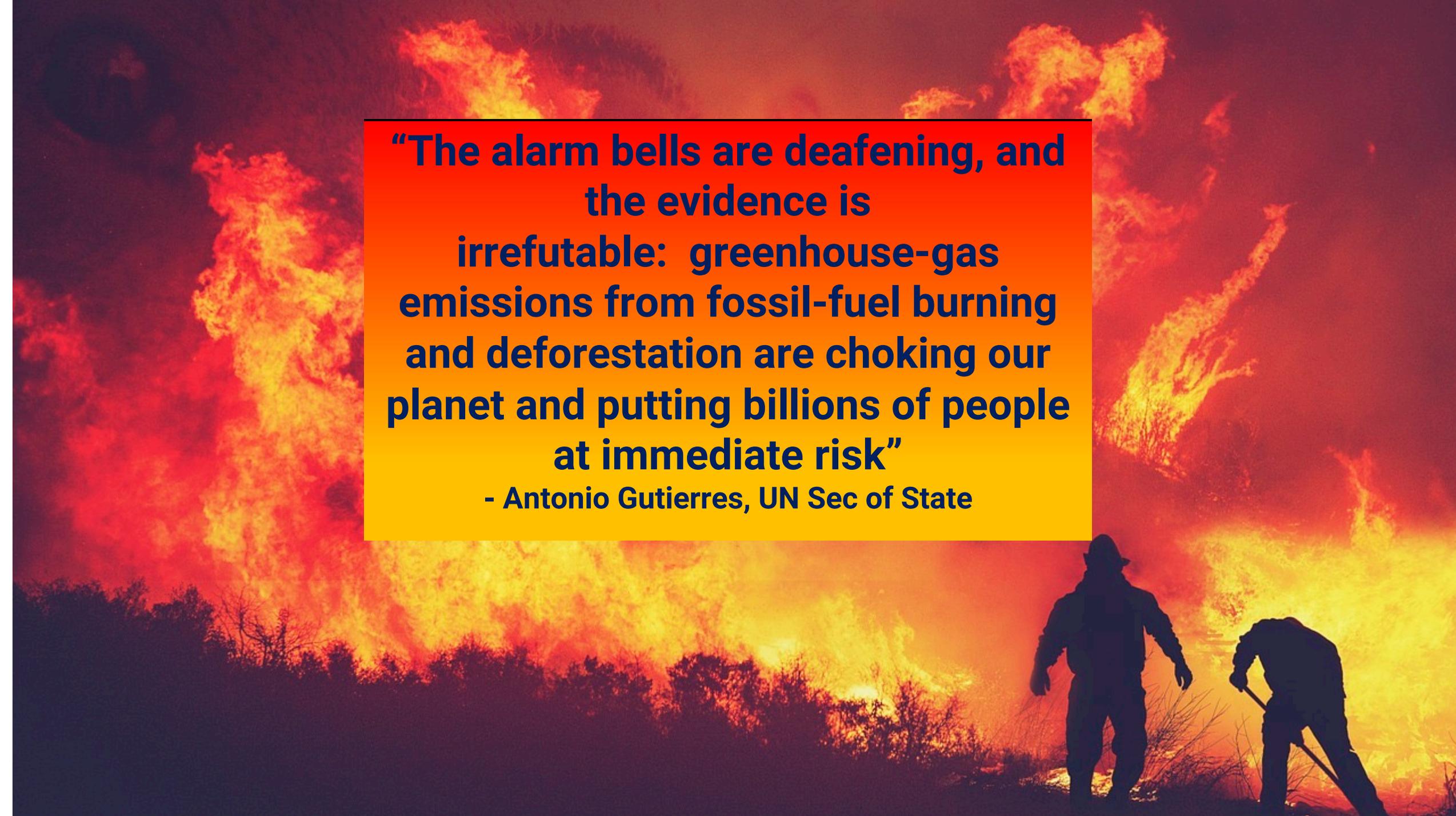
NET ZERO



ZERO CARBON  
CUMBRIA  
PARTNERSHIP

**Karen Mitchell**  
Chief executive, CAfS  
Co-chair, ZCCP

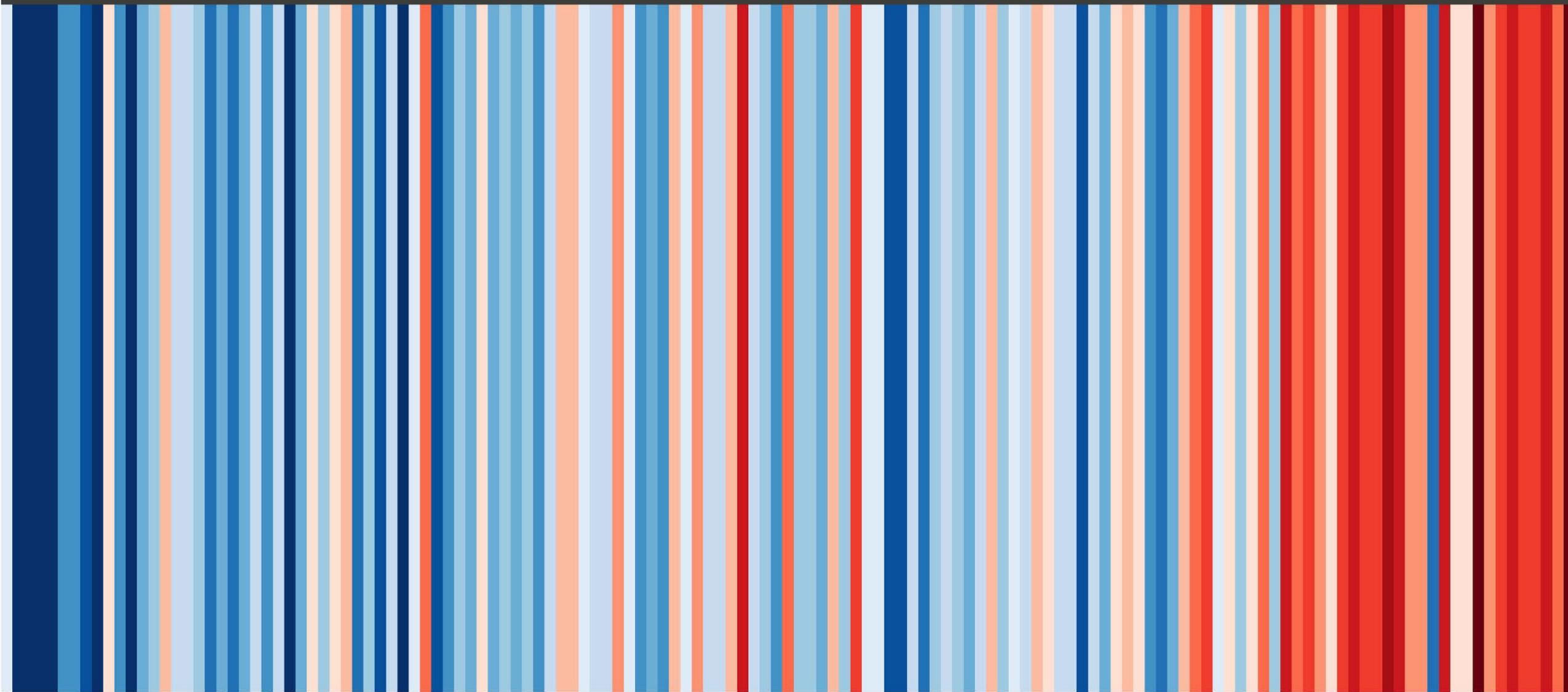




**“The alarm bells are deafening, and  
the evidence is  
irrefutable: greenhouse-gas  
emissions from fossil-fuel burning  
and deforestation are choking our  
planet and putting billions of people  
at immediate risk”**

**- Antonio Gutierrez, UN Sec of State**

# Annual Temperature Change Since 1884 CUMBRIA



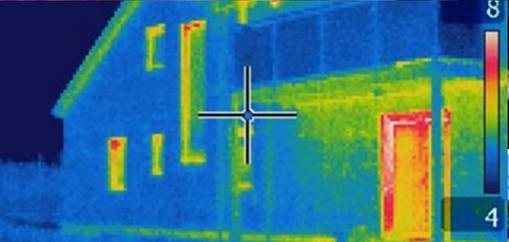
1900

1930

1960

1990

2020

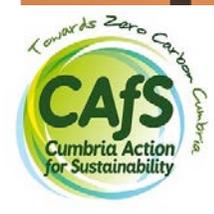


In total around **9,000** green jobs could be created during the transition period and **3,800** in the long term.



# Cumbrian Youth Voices on the Climate Crisis

# ZERO CARBON CUMBRIA PARTNERSHIP



Working towards a zero carbon Cumbria by 2037

JUNE 2023

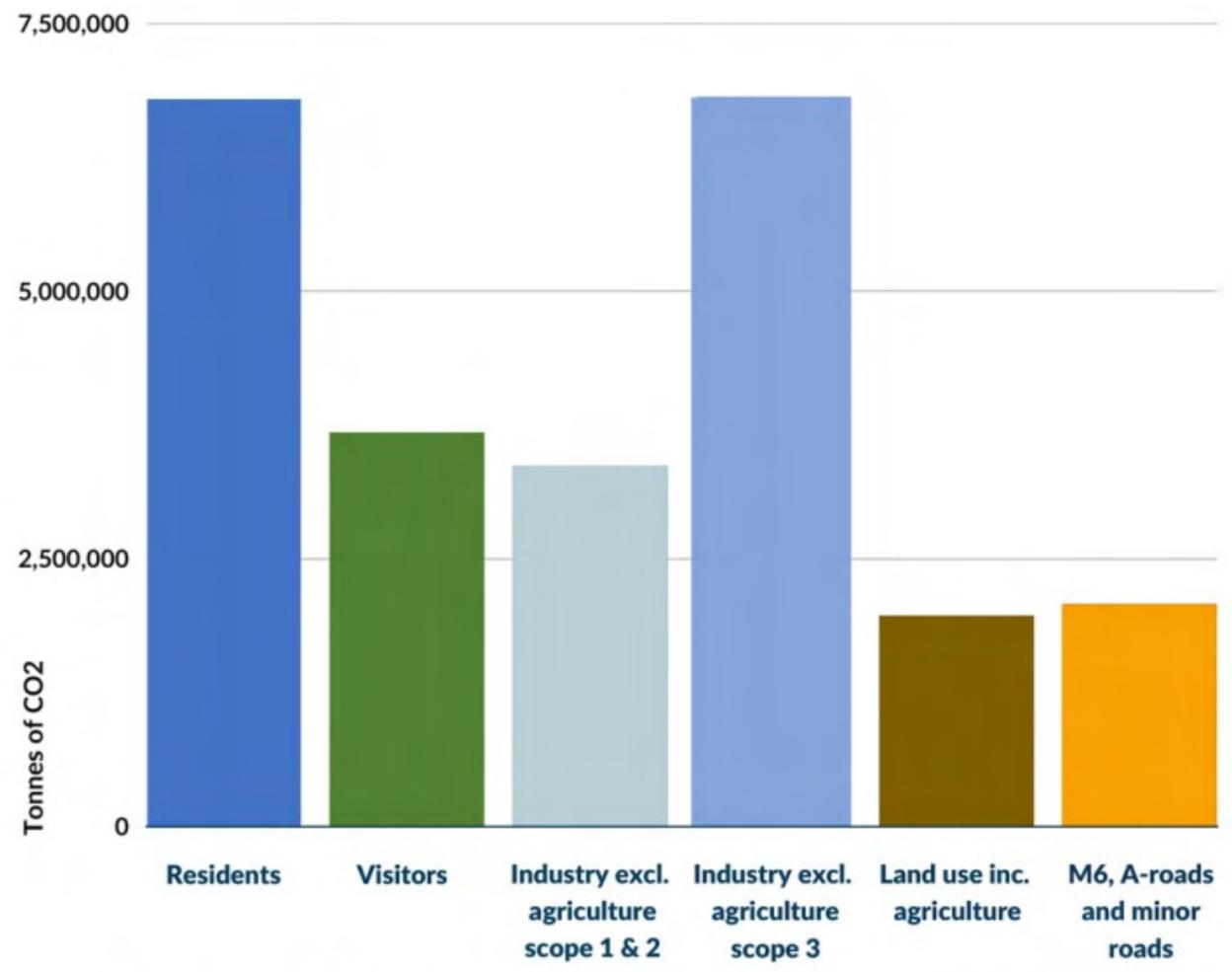
# SUMMARY OF GREENHOUSE GAS EMISSIONS IN CUMBRIA AND TRAJECTORIES TOWARDS NET ZERO



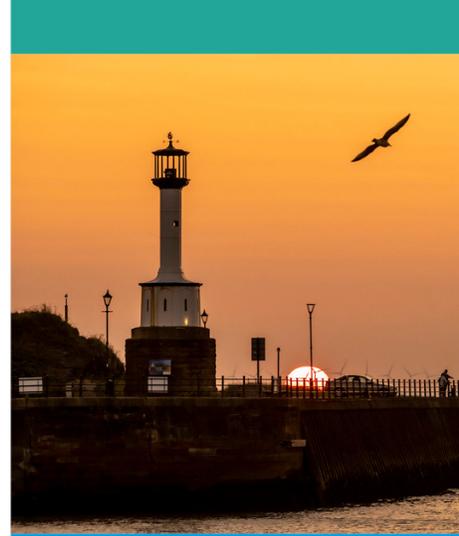
Report is available to download here: [Summary of greenhouse gas emissions in Cumbria and trajectories to net zero \(zerocarboncumbria.co.uk\)](https://www.zerocarboncumbria.co.uk)



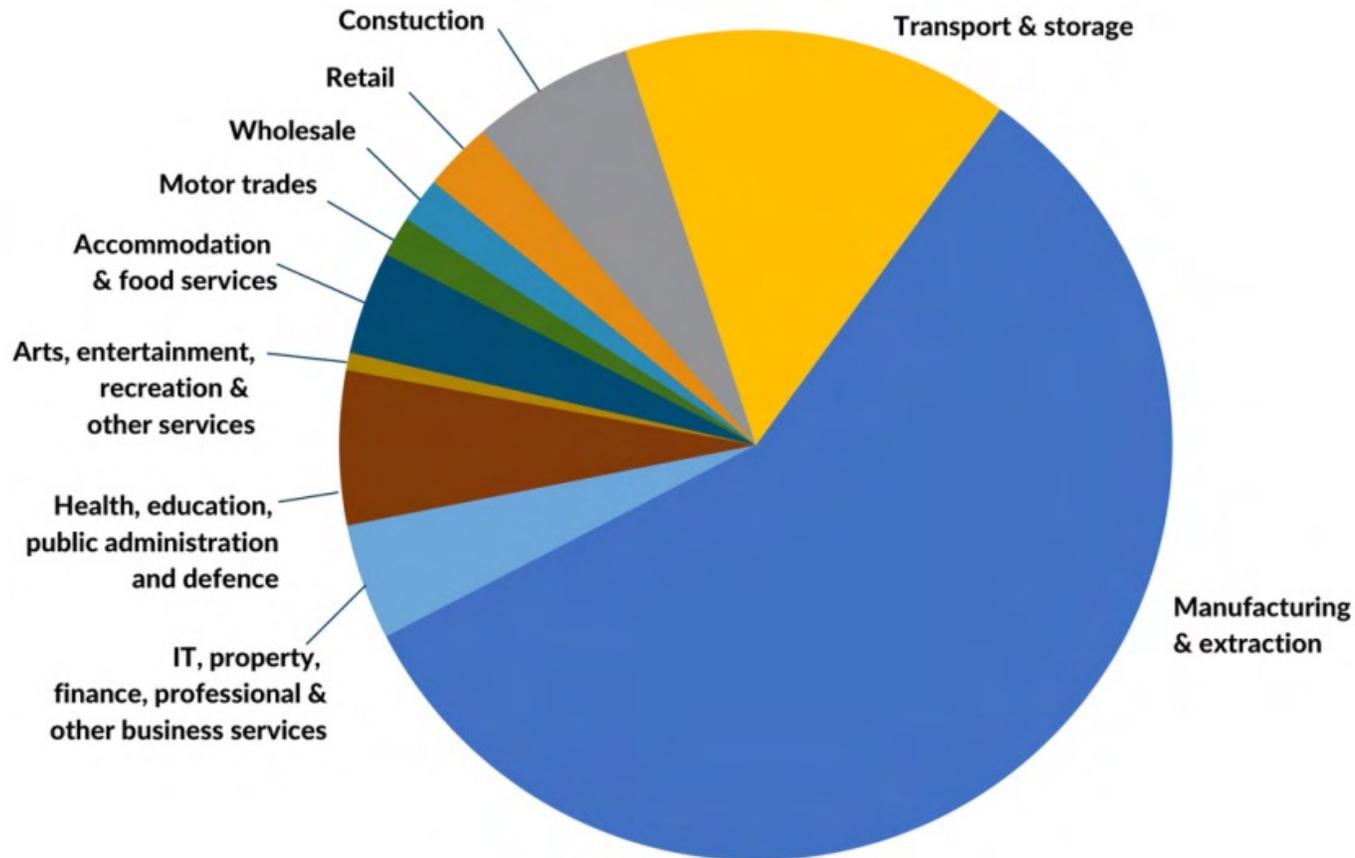
# Greenhouse Gas Emissions in Cumbria (2019)



*Sources of Greenhouse Gas Emissions in Cumbria (2019)*

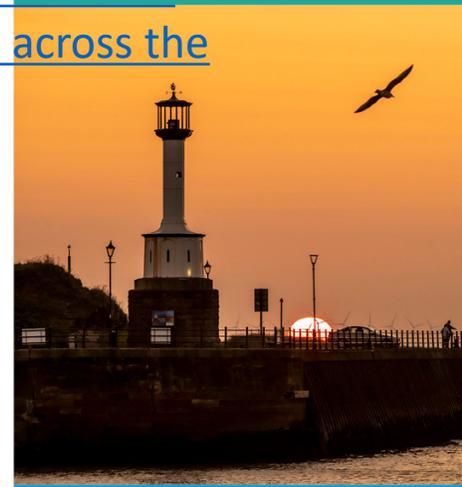


# Greenhouse Gas Emissions in Cumbria (2019)

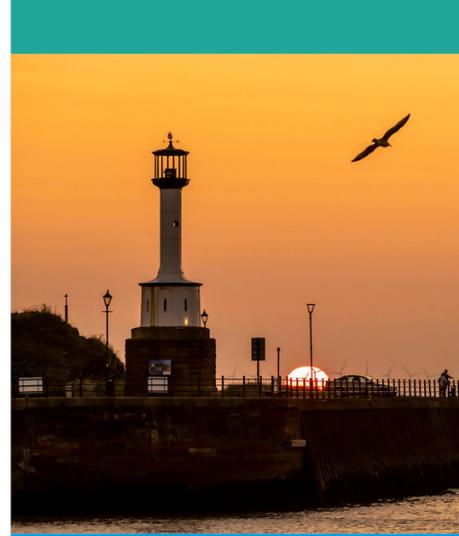


*Cumbria's emissions from industry and other businesses, excluding agriculture (2019) Total: 10.2 MtCO<sub>2</sub>e*

For more info there is a free online event:  
4 October, 2pm  
Book via this link:  
[Summary of greenhouse gas emissions in Cumbria and trajectories to Net Zero - Zero Carbon Cumbria - Carbon reduction action across the county.](#)



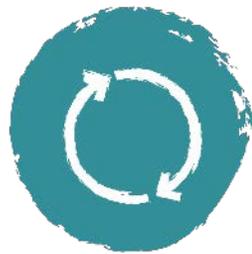
# Sector Groups



**BUILDINGS**



**TRANSPORT  
AND  
MOBILITY**



**CONSUMPTION,  
WASTE AND THE  
CIRCULAR  
ECONOMY**



**FARMING  
AND OTHER  
LAND USE**

SOMEONE  
DO SOMETHING  
ABOUT CLIMATE  
CHANGE!

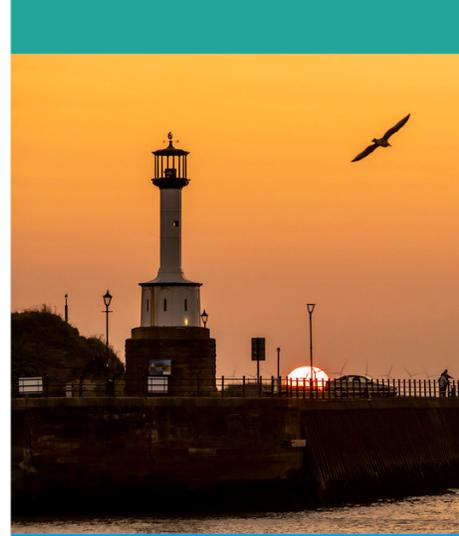
WHAT ARE YOU  
LOOKING AT?

SOMEONE

# CUMBRIA

LEADING THE WAY TO NET ZERO

## Q&A Session



# CUMBRIA

LEADING THE WAY TO NET ZERO

## Lunch



## Cumbria's Clean Energy Ambition

Ian Wheeler  
Head of Sectors  
CLEP



# CUMBRIA'S CLEAN ENERGY AMBITION

Ian Wheeler  
Head of Sectors

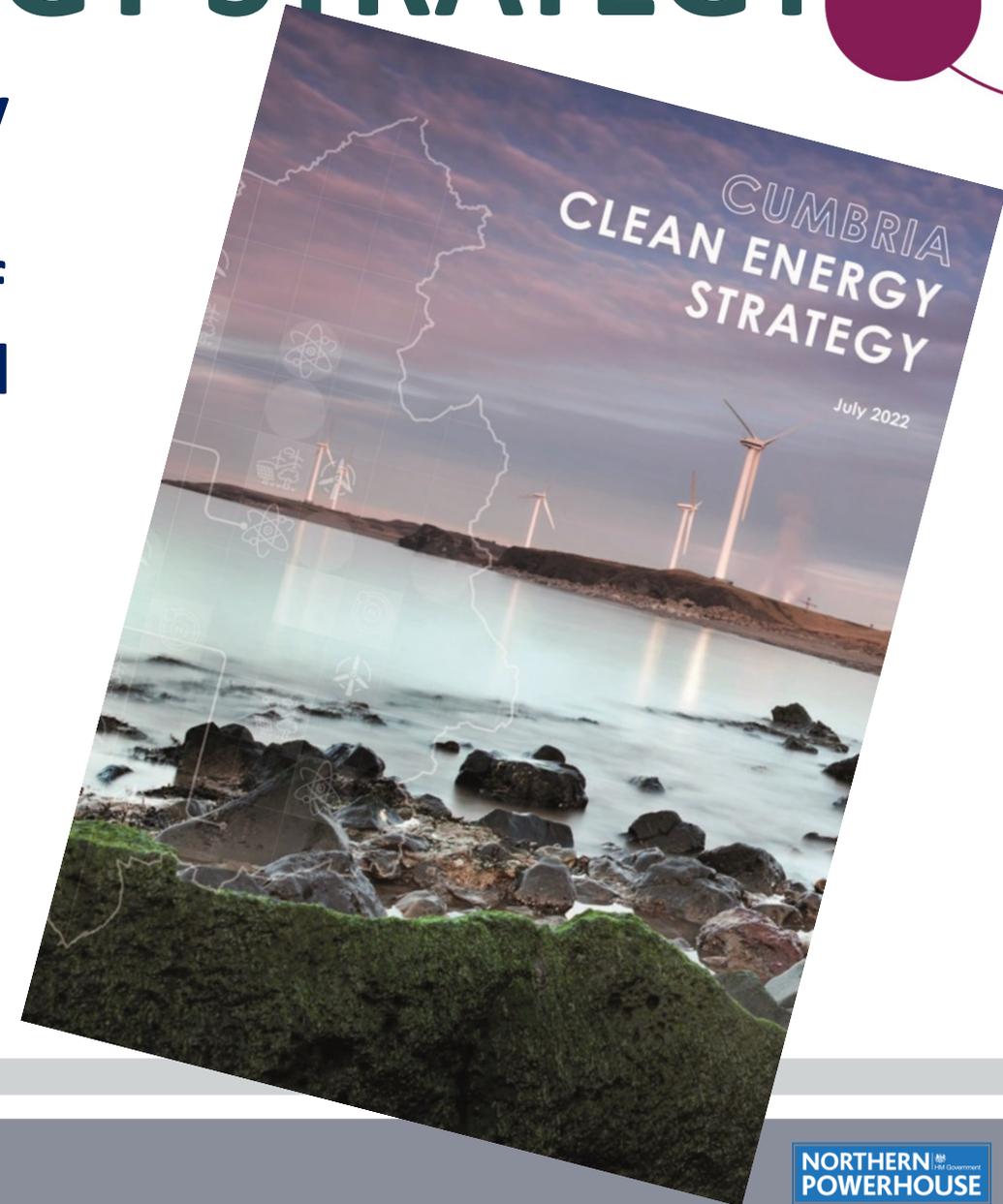
CLEP

CUMBRIA  
LOCAL  
ENTERPRISE  
PARTNERSHIP

NORTHERN  
POWERHOUSE HM Government

# CUMBRIA CLEAN ENERGY STRATEGY

- CLEP launched the Cumbria Clean Energy Strategy in July 2022
- Strategy localised the implementation of the following Government strategies and policies:
  - ❖ 10 point plan for a green industrial revolution
  - ❖ Net Zero Strategy
  - ❖ Energy Security Strategy
  - ❖ Climate Change Committee Carbon Budget



# CLEAN ENERGY AMBITION

*Overall ambition to make a significant clean energy contribution at a national level for net zero and to act as a stimulus for economic growth and levelling up.*



- Cumbria currently produces approximately 5% (~2GW) of UK's clean energy output across a wide range of renewables with offshore wind dominating
- The strategy sets out ambitions across offshore wind, nuclear, hydrogen, carbon storage and a range of wider renewables
- Overall ambition for over 9GW of clean energy by 2040 and potential for 10,000 skilled jobs

# PROGRESS

- Regular review on implementation of the Strategy undertaken by CLEP Clean Energy Panel which draws its representation from business, local government and academia
- Today's case studies on hydrogen, nuclear and carbon storage demonstrate the partnership's action on implementation
- Study commenced to provide impetus to wider renewables including Bio-Energy, Onshore Wind, Hydro, Solar, Tidal/Wave and Heat Networks, with an Action plan to be produced by December 2023
- Engagement with Borderlands Energy Masterplan programme and North West Net Zero Hub for Community Energy Fund

## Case Studies

# Barrow Green Hydrogen and potential for wider deployment in Cumbria

Eric Adam

Project Director

Carlton Power





Making Hydrogen Happen

# Carlton Power is a market leader in the development of electrolytic hydrogen projects across the UK



## Carlton Power

- Founded in 1995
- Proven track record with over 3.5GW of thermal and renewable generation projects delivered and operational, including: Enfield, Langage, and Carrington CCGT's which have a combined capacity of 2.2GW and a capital cost of over £1bn.
- Expertise in:
  - Early-stage development of complex nationally significant projects and diverse, multi-site portfolios.
  - Construction and operations management, trading and optimization of large power generation portfolios.
  - Equity and Debt financing of development and construction.

## Hydrogen Development

- Three highly mature projects invited for negotiation in the first subsidy allocation round for green hydrogen (HAR1).
- Focus on large industrial gas users with low barrier to making dual-fuel switch.
- Supporting the government's target for 5GW of electrolytic production by 2030 and over 500MW by 2025/26.
- Subsidy mechanism allows hydrogen supply at cost equivalence with natural gas for up to 15 years.
- GHECO JV established to deliver projects: <https://www.h2-view.com/story/green-hydrogen-project-portfolio-gheco-established-by-carlton-power-and-schroders-greencoat/>



# Scaling the opportunity - infrastructure

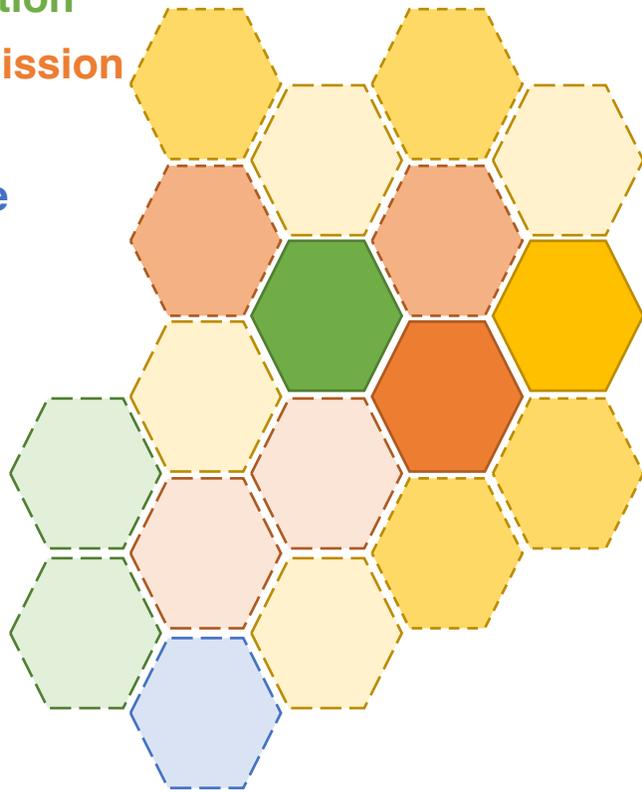


Production

Transmission

Offtake

Storage



## Projects underpin infrastructure investment

- Phase 1
  - Use existing infrastructure
  - Minimise new equipment
  - Prove reliability
- Phase 2
  - Expand distribution network
  - Expand offtaker types
  - Improve resilience
- Phase 3+
  - Network interconnection
  - Connect “mega” infrastructure (transmission and storage)

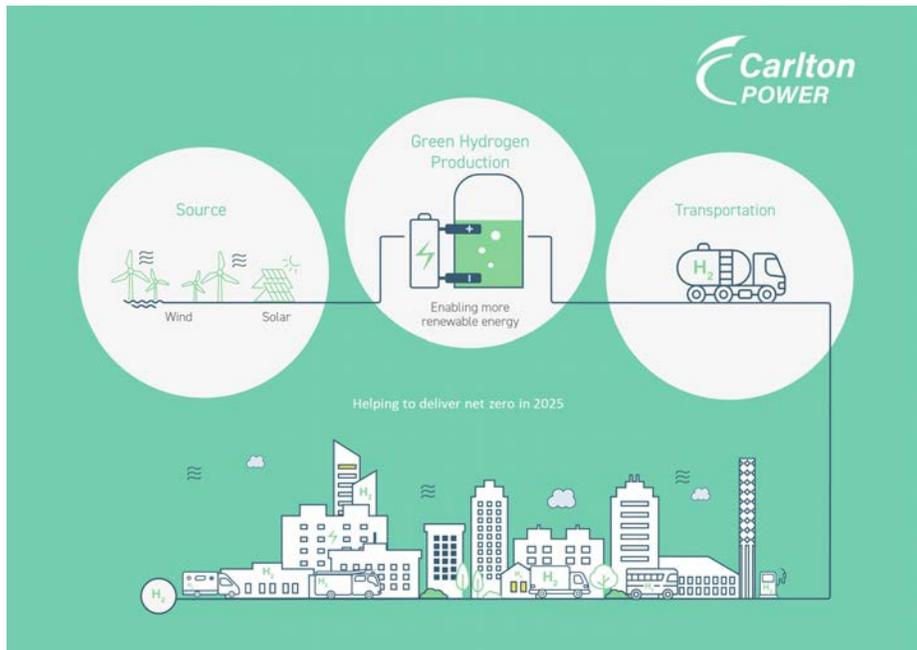
**A combination of small AND large projects will be needed**



## Summary

- 30MW plant underpinned by large multinational anchor off-taker, Kimberly Clark, who are committed to taking 100% of the hydrogen initially produced.
- Growth potential for up to 200MW with known off-takers engaged.
- Grid connection and land rights secured
- Planning permission for Hydrogen Production Facility granted
- Planning permission for Hydrogen Pipeline granted
- 23,400 tonnes CO<sub>2</sub> emissions avoided
- MoU with Cadent Gas, Electricity North West and Cumbria Local Enterprise Partnership and Barrow Borough Council
- <https://www.barrowgreenhydrogen.co.uk/>

# Summary

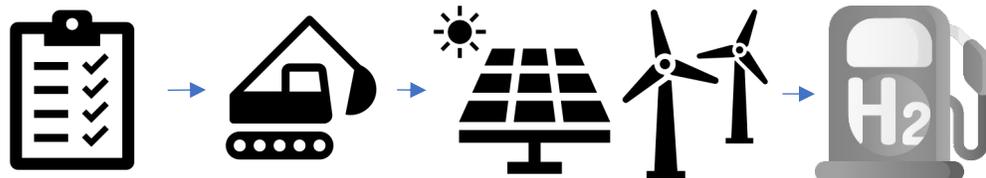


## Key Dates

- Q4 2023: Award of Low Carbon Hydrogen Agreement
- Q1 2024: Final Investment Decision
- Q4 2025: First Hydrogen

## Key Metrics

- Direct Capital Investment - £200m secured
- 70MWe Electrolyser capacity
- 5600-7000 tonnes per annum H<sub>2</sub> production capacity
- Reduction of ca. 50,000 tonnes CO<sub>2</sub> per annum



Eric Adams – Projects Director

[eadams@carltonpower.co.uk](mailto:eadams@carltonpower.co.uk)

07803 085942

<https://www.linkedin.com/company/carlton-power-limited/>

## Case Studies

### Morecambe Net Zero Carbon Storage Scheme

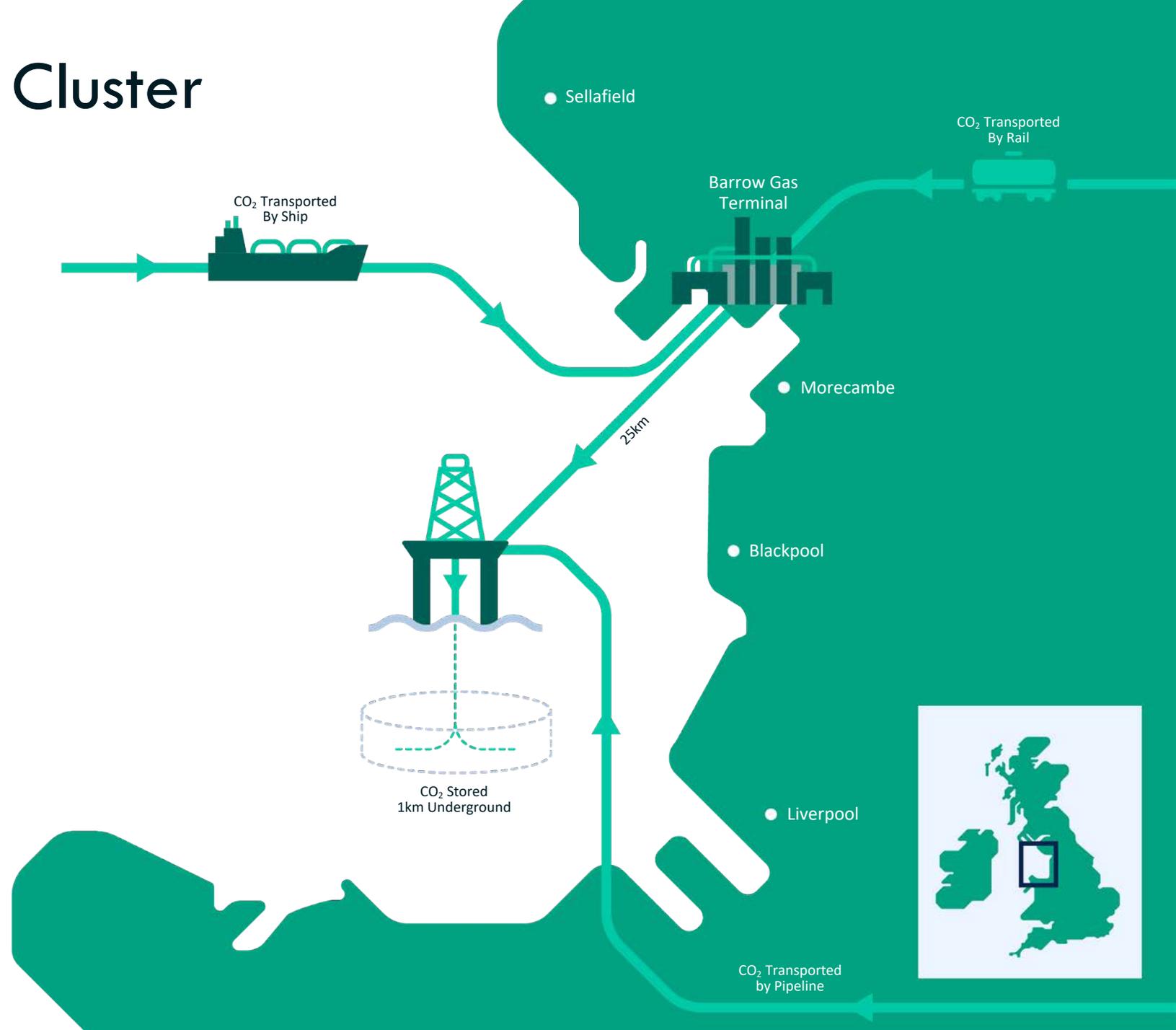
Richard Peace  
Energy Transition Director  
Spirit Energy



# Morecambe Net Zero Cluster

Storage at scale by 2030

- **Scale** – One gigaton of CO<sub>2</sub> storage capacity
- **Geology** – well characterized natural gas reservoir with proven seal
- **Location** – ideally placed to serve the Peak Cluster, South Wales and Ireland
- **Diversity** – transport by pipeline, ship and rail
- **Infrastructure** – re-use of natural gas pipelines and onshore gas terminal
- **Socioeconomic benefit** – just transition, investment, and levelling up



## Case Studies

# Small Modular Reactor Deployment at Moorside

Andrew Carr  
Solway Community Power





# Solway Community Power Company

## Overview

SMR Customer and End User



# A clear imperative

## The need for new nuclear is clear, compelling and now

- Government policy
- Energy Security
- Local/Regional Development

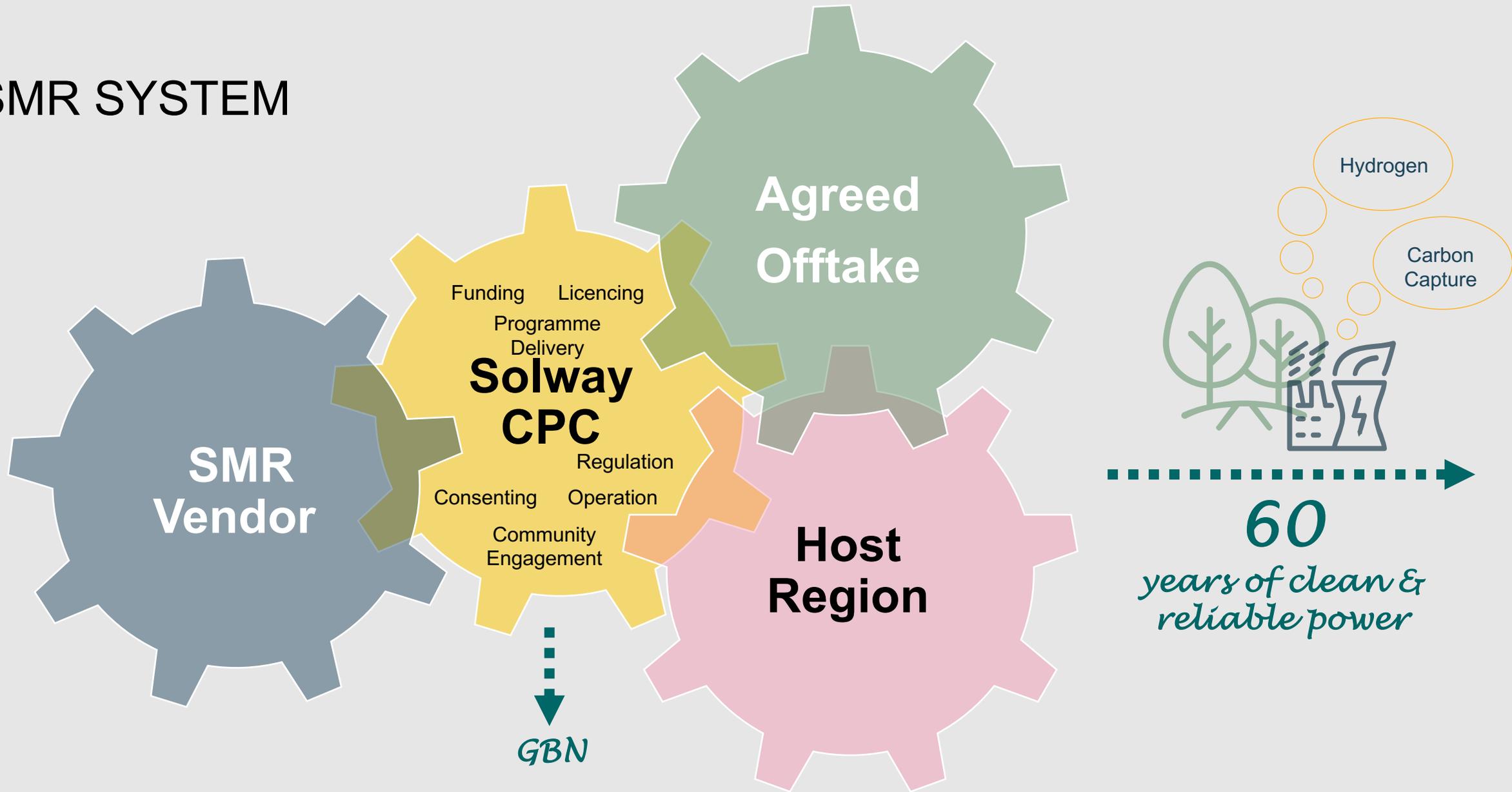
## The solution is known

- Small Modular Reactors
- Clean Sustainable Energy for the Regions
- Attracting Inward Investment

## However, there is a gap...

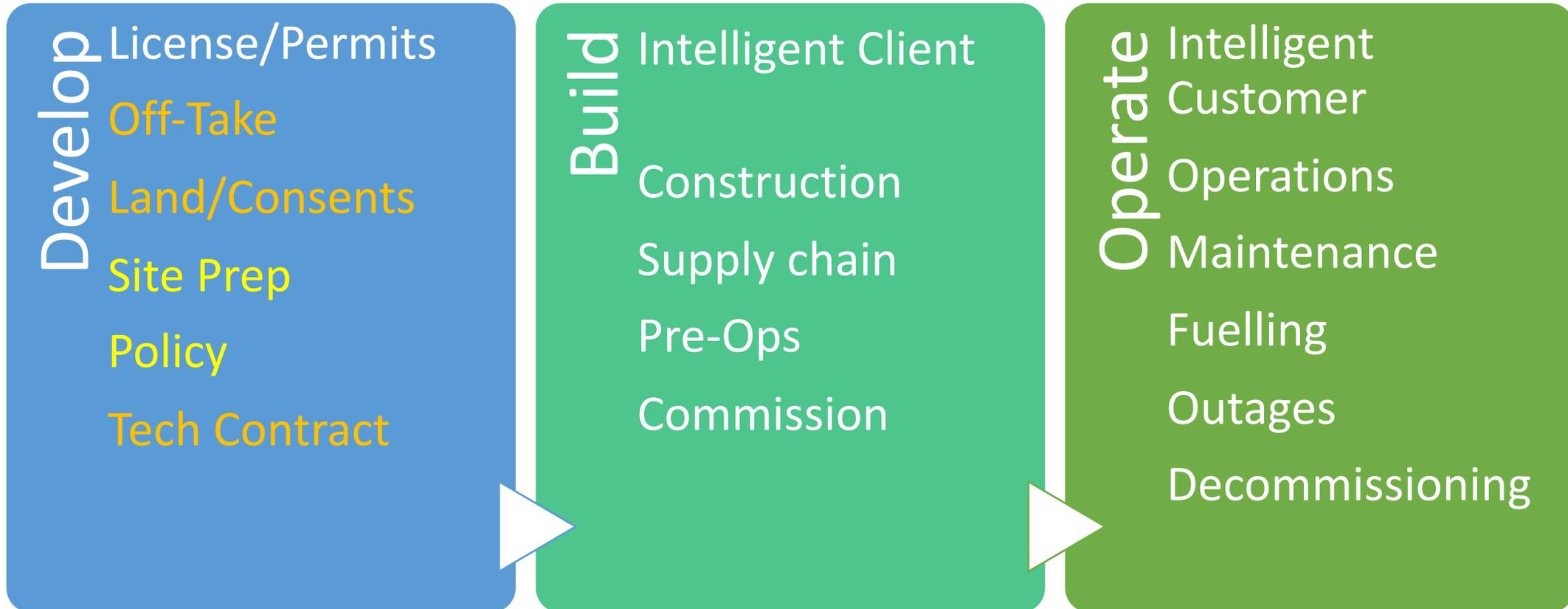
- **Technology Purchaser**
- **Permitted and Licensed Operator**
- **Delivery of the Community Mandate**

# SMR SYSTEM



# Project Investability – Solway Risk Management

*Upfront uncertainty – Confident Return, No Risk to HMG*



# The Opportunity

## SMRs as the enabler

- Initially just under 1GW of sustainable reliable energy
- Security of supply
- Local/Regional Distribution
- Private Wire opportunities (PPA)

## Attracting Investment

- Already secured project financing for the Solway project
- Opportunities exist for further projects to be funded
- Significant interest from the private market

## Working with Communities

- **Enabling a Community Development Program**
- **Industry very interested**
  - **Business Park developers**
  - **High energy users**
  - **Carbon Capture/Data Centers/Farming/Hydrogen**



Thank  
You



## Case Studies

### Small Modular Reactor Deployment at Moorside

Nick Shelly

Senior Business Development Manager

Element 2





# ELEMENT 2

## Why hydrogen in transport ? Potential for Cumbria

Nick Shelley, Senior Business Development Manager

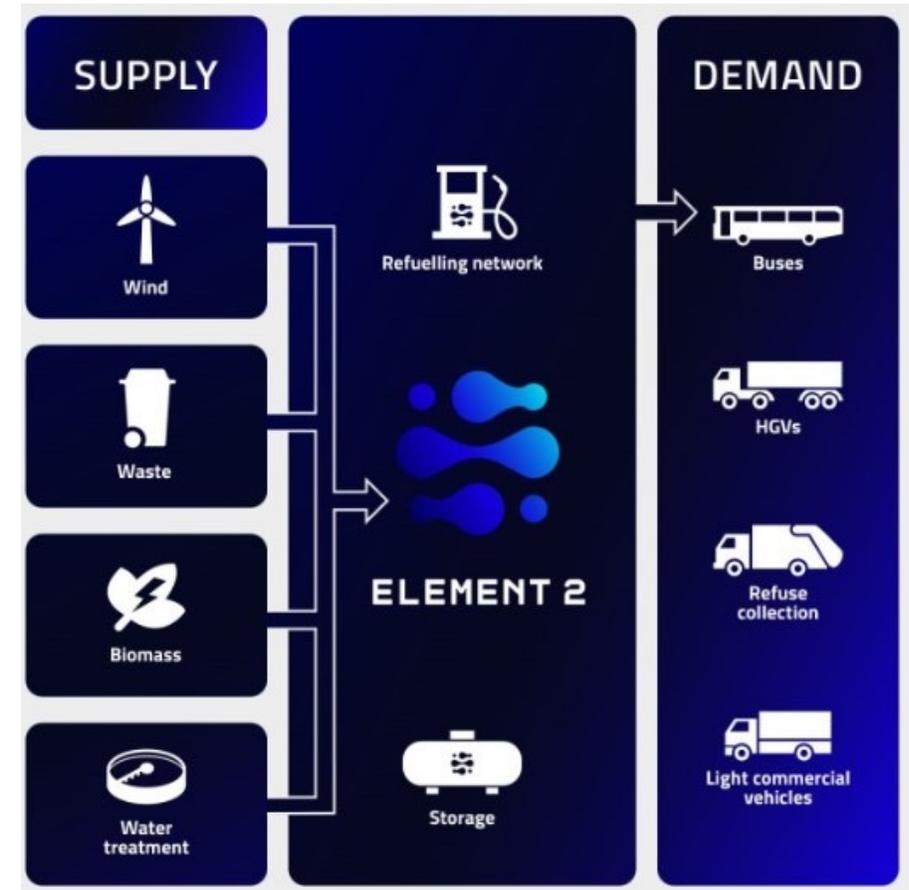
[nick.shelley@element-2.co.uk](mailto:nick.shelley@element-2.co.uk)

11 Sept. 2023

# Our role in the hydrogen value chain



- Led by a team of hydrogen experts with a passion for clean safe energy
- We are building a UK-wide network of safe, high-quality hydrogen refuelling stations by 2027
- Targeting local green hydrogen
- We build mobile and permanent hydrogen refuelling infrastructure at our cost
- Working closely with hydrogen producers, fleets, site owners and vehicle manufacturers



# Is hydrogen safe ?



14 times lighter than air



Higher auto-ignition temperature than traditional fuels



Mature compressed gas safety standards

[Hydrogen vs. Gasoline Leak and Ignition Test- which is safer? - YouTube](#)

[Part 4: Hydrogen, Is It Safe? - YouTube](#)

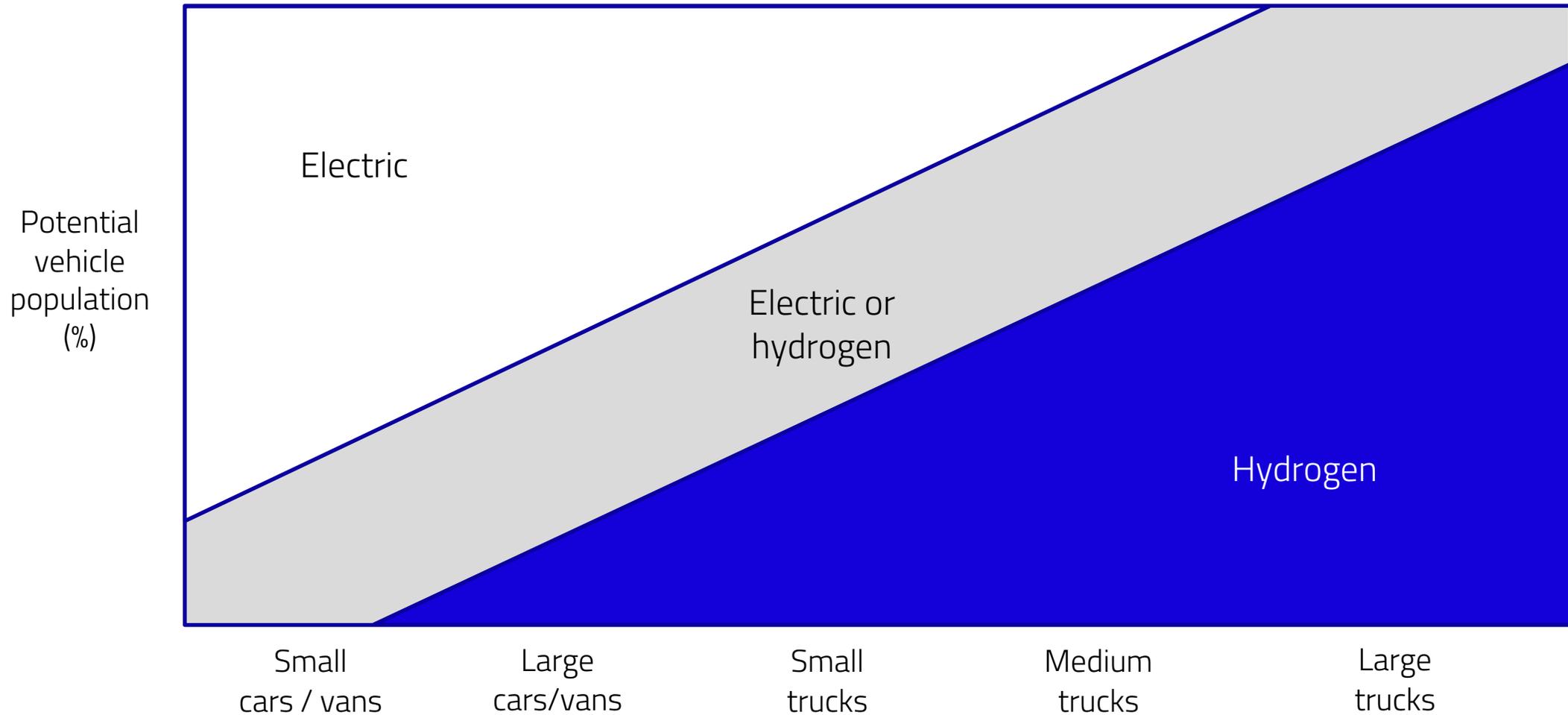
[HYDROGEN SAFETY - YouTube](#)

# Benefits of hydrogen vehicles



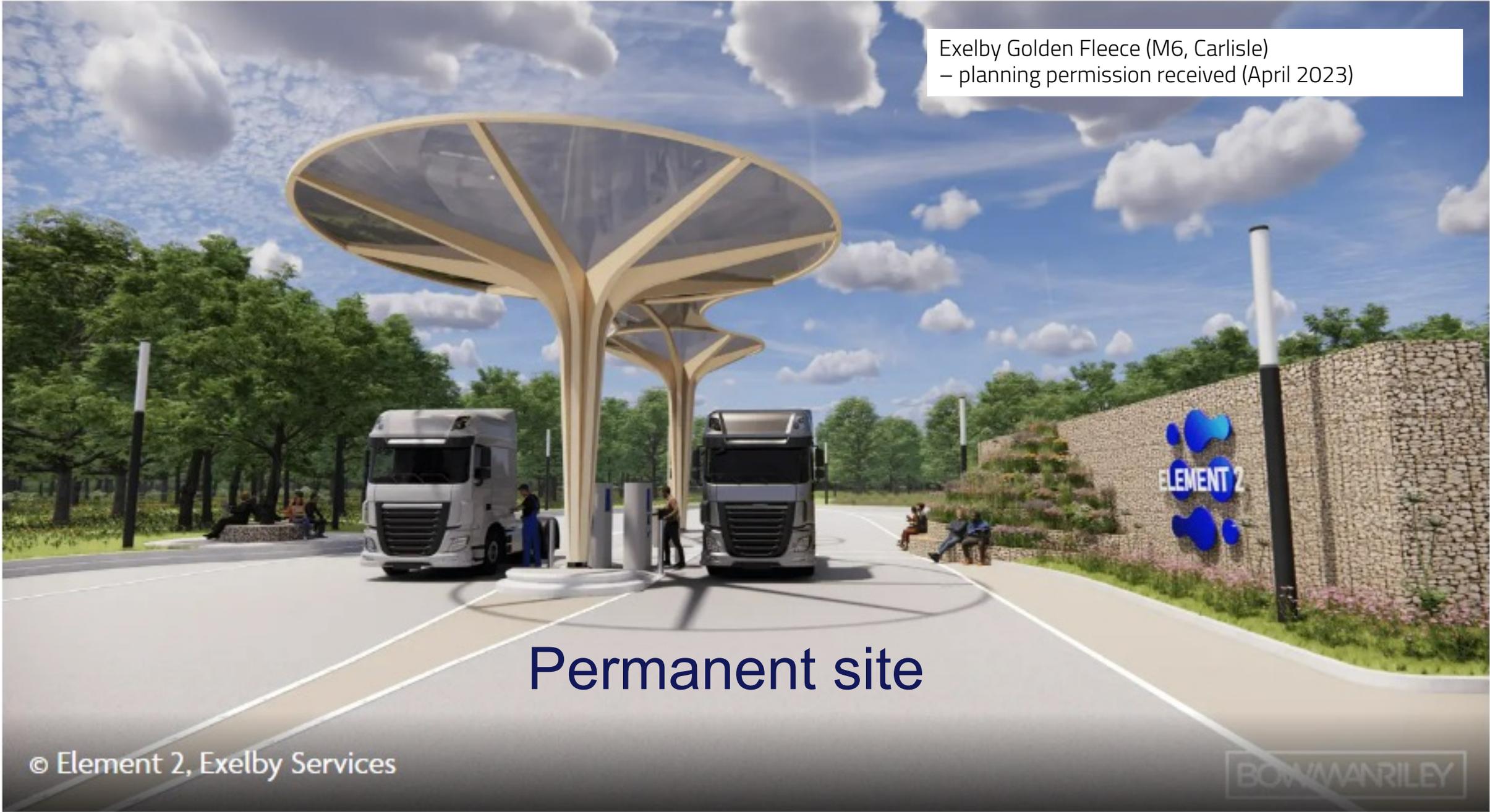
- Similar to current **diesel** operations (range, refuelling, payload, uptime)
- No charging challenges (access, time, direct / indirect costs)
- Various potential **vehicle** technology (fuel cell, combustion, dual fuel, diesel conversion)

# Electric and hydrogen, not electric versus hydrogen



*Our expectations based on media announcements and fleet feedback including payload, range, charging capability and cost*

Exelby Golden Fleece (M6, Carlisle)  
– planning permission received (April 2023)



# Permanent site

# Hydrogen transport over the coming years ...

	2022	2023	2024	2025	2026	2027	2028	2029	2030
Supply	Limited hydrogen		Increasing production		Large scale production		Import and export		
Vehicles	Engine testing	Demo vehicles	Initial vehicles	Large vans Small trucks		HGVs	Large scale production (all vehicles and manufacturers)		
Network	Demo sites		Initial sites Temporary sites		Increasing sites		Limited national network		Increasing national network
Customers	Awareness	Demo vehicles	Initial vehicles	Start fleet transition alongside electric			Full fleet transition plans		

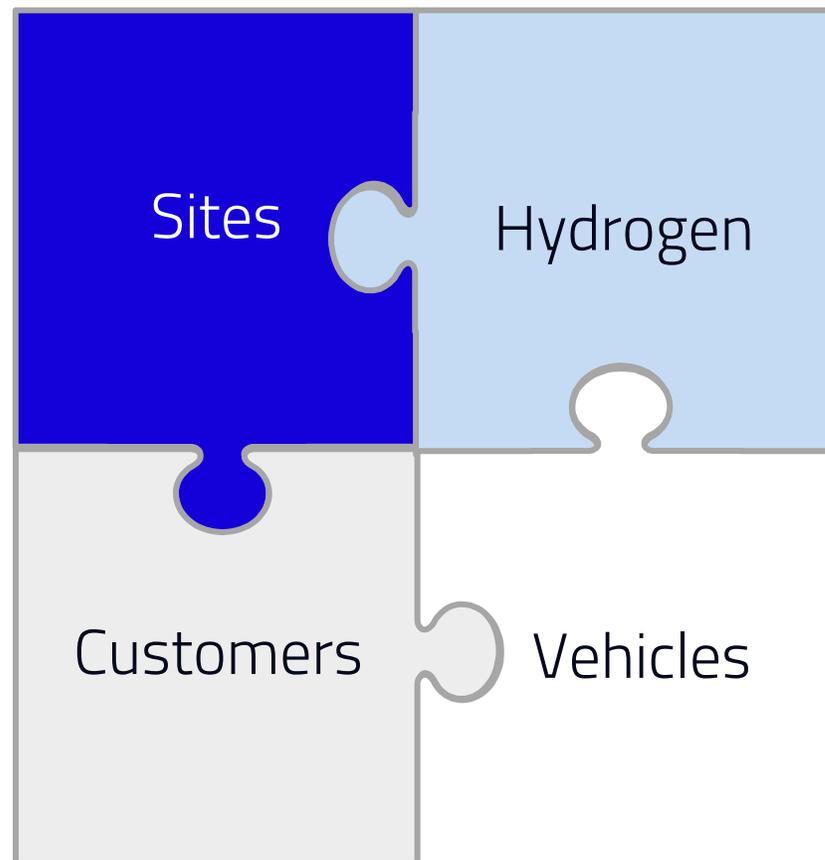
# The potential for Cumbria

## Site plans

- (M6 corridor (NW England to Glasgow)
- Carlisle initially; Kendal, Barrow and Workington potential

## Leading the way for net zero

- National / local fleets (vans and trucks), taxis, buses, refuse collection vehicles ...



Local production projects planned

Vehicles becoming available (fuel cell, combustion, dual fuel)

By working together, we can make a positive impact on climate change and the local economy

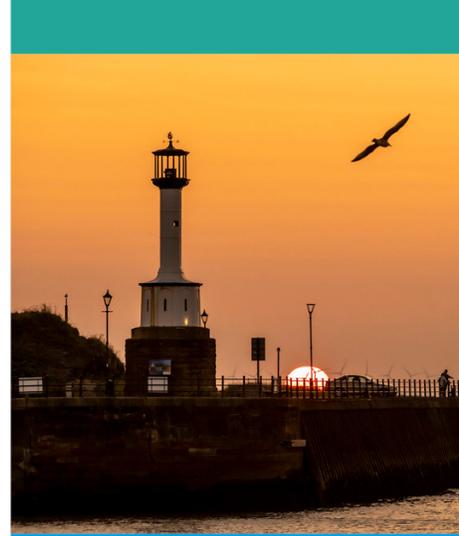


**ELEMENT 2**

# CUMBRIA

LEADING THE WAY TO NET ZERO

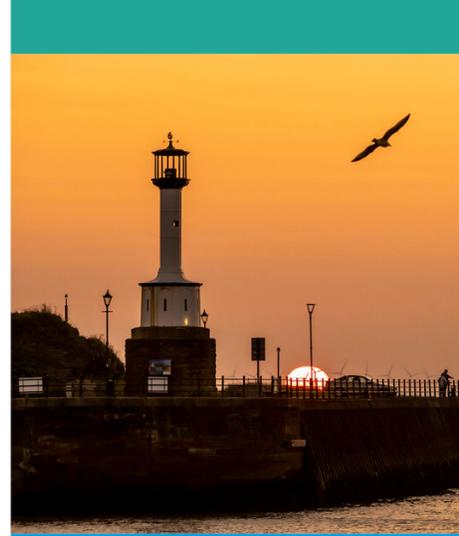
## Q&A Session



## Business Decarbonisation

Claire Deekes

Chair of Business Decarbonisation Strategy  
Group and Chief Customer Officer,  
Cumberland Building Society



# BUSINESS DECARBONISATION

## September 2023

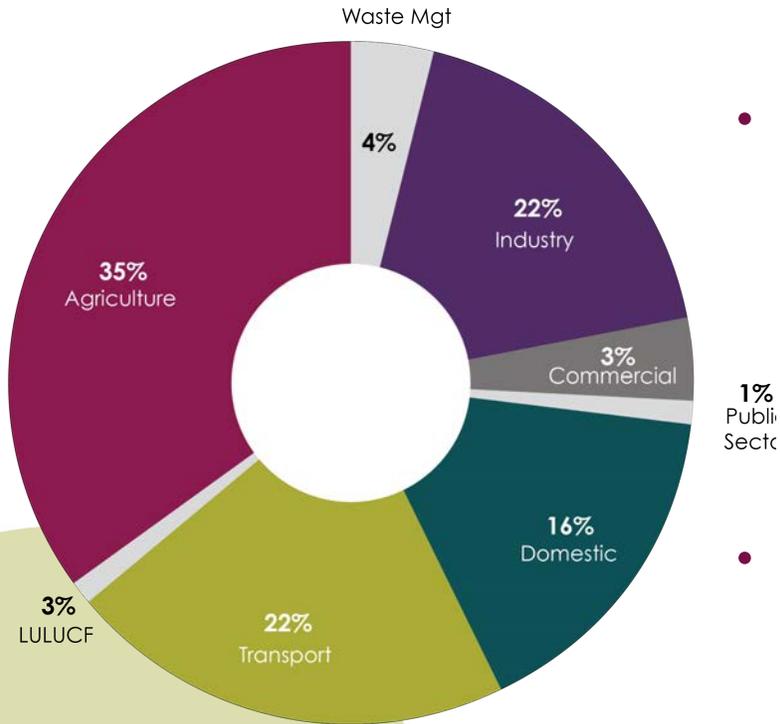
Claire Deekes Chief Customer Officer, Cumberland Building Society &  
Chair of CLEP Business Decarbonisation Strategy Group

CLEP

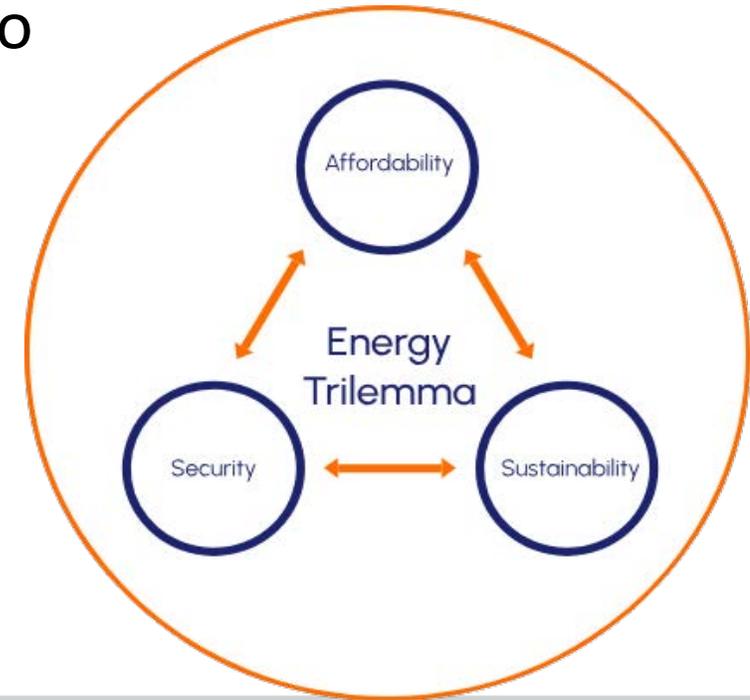
CUMBRIA  
LOCAL  
ENTERPRISE  
PARTNERSHIP

NORTHERN  
POWERHOUSE HM Government

# Introduction



- Industry and Commercial activities constitute nearly 25% of Cumbria's carbon emissions and is a key area of focus for the LEP in our drive to achieve Net Zero.
- Businesses across all sizes and sectors challenged by the energy trilemma.



# Business Decarbonisation Strategy Group

- Business led strategy group formed to address the challenges of decarbonisation with representation spanning from large energy intensive industry through to SMEs across all of our sectors.
- Following formation workshop, a revised 10 point plan has been established and the strategy group will focus on delivering against the plan.
- The case studies presented this afternoon give a flavour of the commitment of businesses to achieve net zero, progress being made and the challenges we still face.

# Business Decarbonisation 10 Point Plan

- A new outline plan has been developed from our initial workshop and the strategy group will now drive it forward.
- Key emphasis is on practical guidance to businesses and working in collaboration to share best practice.
- CLEP website being updated to provide a “system navigator” for clear support.

**CLEP**  
CUMBRIA  
LOCAL  
ENTERPRISE  
PARTNERSHIP

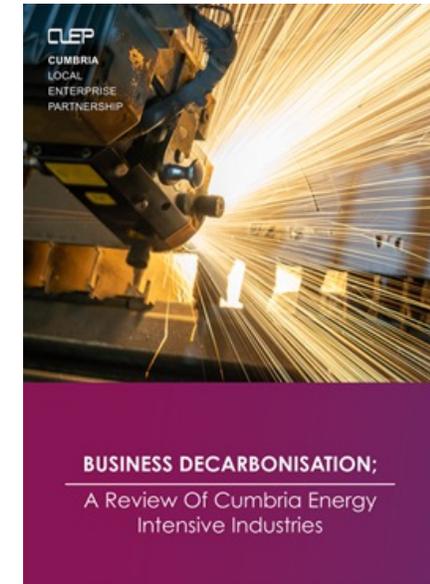
## Business Decarbonisation

### 10-POINT PLAN

- 1 Business Decarbonisation Leadership**  
The strategic importance of business governance body to provide visible leadership on this agenda, to sit alongside the Clean Energy Sector Panel.
- 2 Assess, Map and Track**  
Develop a Cumbria-level performance management framework that provides an accurate baseline, tracks progress and provides comparison with other areas to assess progress.
- 3 Energy Intensive Industries**  
Work with our bigger companies to support large scale decarbonisation.
- 4 Decarbonisation System Navigator**  
Provide clear guidance and “horizon scanning” for companies through the wealth of information and initiatives available.
- 5 Business to Business Support**  
Sharing best practice and case studies from our diverse range of businesses to work together for decarbonisation.
- 6 Establishing Funding Routes**  
Provide awareness and guidance for government funding initiatives and other potential investment opportunities.
- 7 Decarbonisation Events Programme**  
Implement a programme of workshops of decarbonisation, including assessing footprint, calculating return on investment, exploring appropriate technologies and securing investment.
- 8 Accreditation and Training**  
Provide advice for decarbonisation training programmes and benchmarking accreditation schemes.
- 9 Facilitate the First Steps**  
Promote the common energy efficiency schemes all businesses can apply.
- 10 Promote the Successes and Address the Challenges**  
Provide wide stakeholder awareness of our successes and address the particular challenges for Cumbria.

# Decarbonisation – Every Emission Counts!

- Cumbria’s energy intensive industries account for over 80% of our business emissions.
- CLEP published a review of these industries and continue to support large scale decarbonisation. E.g. Barrow Green Hydrogen
- CLEP are organising workshop with external technology leaders (Energy System Catapult & Henry Royce Institute) to further identify common solutions.
- We continue to support SME’s with workshops, business support and through the “Innovate for Success” grant programme for decarbonisation initiatives.
- Decarbonisation is the focus but as part of wider sustainability responsibilities
- Every business big or small can make a difference and has a voice to be heard. Collaboration is vital!



LOCATIONS	
1	UB
2	British Gypsum
3	TATA STEEL
4	JAMES CROPPER
5	Kendal Nutricare
6	SK
7	SK
8	Kimberly-Clark
9	SPIRIT ENERGY
10	BAE SYSTEMS
11	Solihull Ltd
12	HOLMEN IGGESUND
13	Freemills
14	INNOVA FUTAMURA
15	PIRELLI
16	Stork of Storks HERE

## Case Studies

### Iggesund Energy Intensive Industry Perspective

Jonny Lowe

Head of HR and Corporate Responsibility  
Holmen Iggesund



# Holmen Iggesund

## Net Zero - Energy Intensive Industries Perspective

11 September 2023

Jonny Lowe – Head of HR and Corporate Responsibility

Continuing to invest in our operations and infrastructure to improve quality  
Paperboard and Energy

PLATINUM Top 1%

2023  
**ecovadis**  
Sustainability  
Rating



## Sustainability means more than a carbon neutral site

- People and society
- Climate
- Biodiversity
- Environment
- Sustainable Supply Chain

What next...



# Flue2CHEM

SCIENCE BASED INDUSTRIES  
JOIN FORCES FOR FIRST  
TIME TO ADDRESS  
UK NET ZERO  
TARGET

## PURPOSE

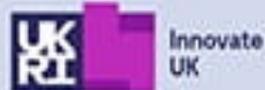
The Flue2Chem project  
will **convert** industrial  
waste gases to create  
more **sustainable**  
consumer products.



FUNDING

**£2.68**

million from  
Innovate UK



**GOAL** Cut around 15-20 MILLION  
TONNES of carbon dioxide  
emissions a year and **help** the  
UK reach its net zero target.

LENGTH TWO-YEAR PROGRAMME

PARTNERS



TATA STEEL



CRODA



HOLMEN

*Industry giants from £73 billion  
UK sector embark on first ever cross sector  
collaboration to tackle decarbonisation.*



# Industrial Waste Heat

- **500 GWh/yr**
  - 200GWh/yr up the flue
  - 300GWh/yr to the Solway

Equivalent to demand of c40,000 UK homes!

Not all is directly available, but...

**20%** could heat the houses of **Workington**



# HOLMEN IGGESUND

[iggesund.com](https://iggesund.com)

## Case Studies

### Holker Hall Estates Perspective

Stuart Simms

Chief Financial Officer  
Holker Estates.





STUART SIMS  
HOLKER GROUP  
CHIEF OPERATING OFFICER





**17,000**  
ACRES



**1,500**  
ACRES WOODLANDS



**12,000**  
ACRES TENANTED



**1,000**  
ACRES PEAT BOGS



**850**  
ACRES ARABLE



**100,000**  
VISITORS



**30,000**  
VISITORS



**550**  
PLOTS



**232**  
TENANTS



**550**  
NEW HOMES



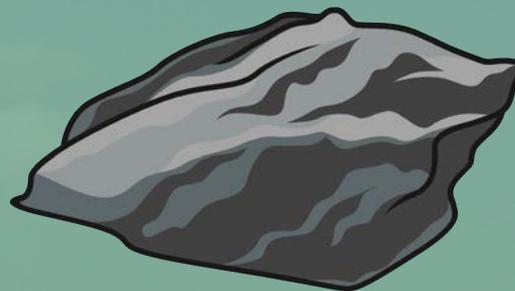
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STONE QUARRIES



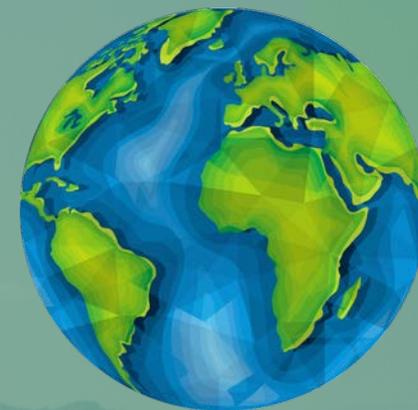
180+

YEARS



9

STONES



GLOBAL REACH

ZERO WASTE

REDUCE  
REUSE  
RECYCLE



CONCRETE PLANT



INERT LANDFILL



SAND QUARRY

RECYCLING PLANT



# The Lake District Vernacular





## OUR WHY

THE HOLKER GROUP VISION IS TO BE AN INNOVATIVE, THRIVING GROUP PROGRESSING A SUSTAINABLE LEGACY FOR ALL

One of our key supporting strategic objectives is to significantly reduce the carbon emissions across the group over the next twenty years





## THE LAST 12 MONTHS

- Appointed an in-house Environment and Sustainability Manager
- Engaged Small World Consulting
- Kicked off some interesting projects

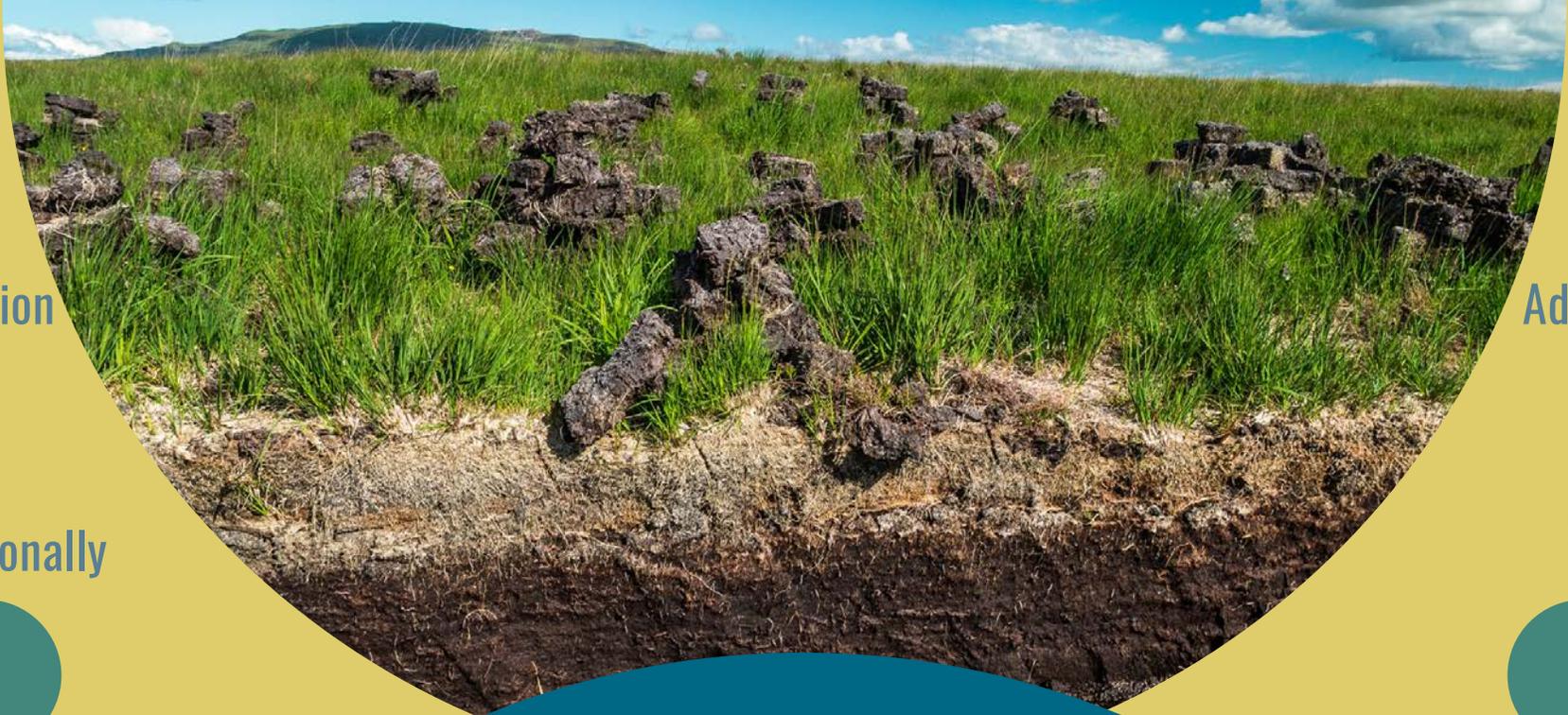


# CARBON FOOTPRINT

## WHERE ARE WE NOW.....

- Baseline for a complex business
- Expect to complete and publish by the end of 2023
- Track and Report = Engagement
- Colleagues, customers, suppliers and local community
- Support investment decisions
- Celebrate successes and share knowledge





Paludiculture Exploration

Adjacent to Arable Farm

12 Projects Nationally

Spagnum or Bullrush

Roudsea Moss  
1000 Acres raised bog

Did you  
Know.....

# Paludiculture Project



## SOLAR PROJECT

- 900k kWh per annum consumed
- CUMBRIA LEP - Innovation For Success - Decarbonisation scheme
- 890 Solar Panels Installed
- 1300m<sup>2</sup>
- 250k kWh to be generated per annum
- 70% of all energy created to be consumed on site



Place to Plate

Circular Economy



# INNOVATE UK 3 MONTH FEASIBILITY STUDY

Wokshop at Cartmel Racecourse

9 Partners

30 Stakeholders

2 Projects



# Marginal Gains - 1%

- Cafe - Local produce & energy efficient refrigeration
- Cartmel Racecourse - 100% recycled waste, local vendors, glasses made of recycled plastic
- Holiday Parks - Air source heat pumps for swimming pools, early adopter of electric car charging at unit
- Gardens - Peat free compost and compost production
- Energy audits - supported by Barrow and South Lakeland
- Wildflower Meadows at Holker
- Devonshire Buildings - Small Green Business Status





# OUR SUSTAINABLE JOURNEY...

**1993**

Wind Farm



**2016**

Biomass  
Boilers



**2020**

EV Chargers and  
Electric Company  
Vehicles



**2021**

Regenerative  
Farming





THANK YOU

## Case Studies

### Lakeland Free Range Egg Company an SME Perspective

David Brass  
Owner



# The route to green- a challenge

The  
**Lakes**  
Free Range Egg Co

**David Brass**

**The Lakes Free Range Egg Co Ltd**

**[www.lakesfreerange.co.uk](http://www.lakesfreerange.co.uk)**

## **The Lakes Free Range Egg Co Ltd**

- **Family company**
- **130 employees**
- **£60 million T/O**
- **Pack ½ billion eggs per year for major retail and food service.**
- **Sustainability and net zero rule our customers world**

## Net zero our route so far

- **New factory**
- **Biomass**
- **PV's**
- **Rainwater**
- **Scope 1/ 2 since 2016**
- **Volt opt,**
- **LED**
- **Trees**
- **Soy**
- **Trucks**
- **No waste to landfill**

The  
Lakes  
Free Range Egg Co

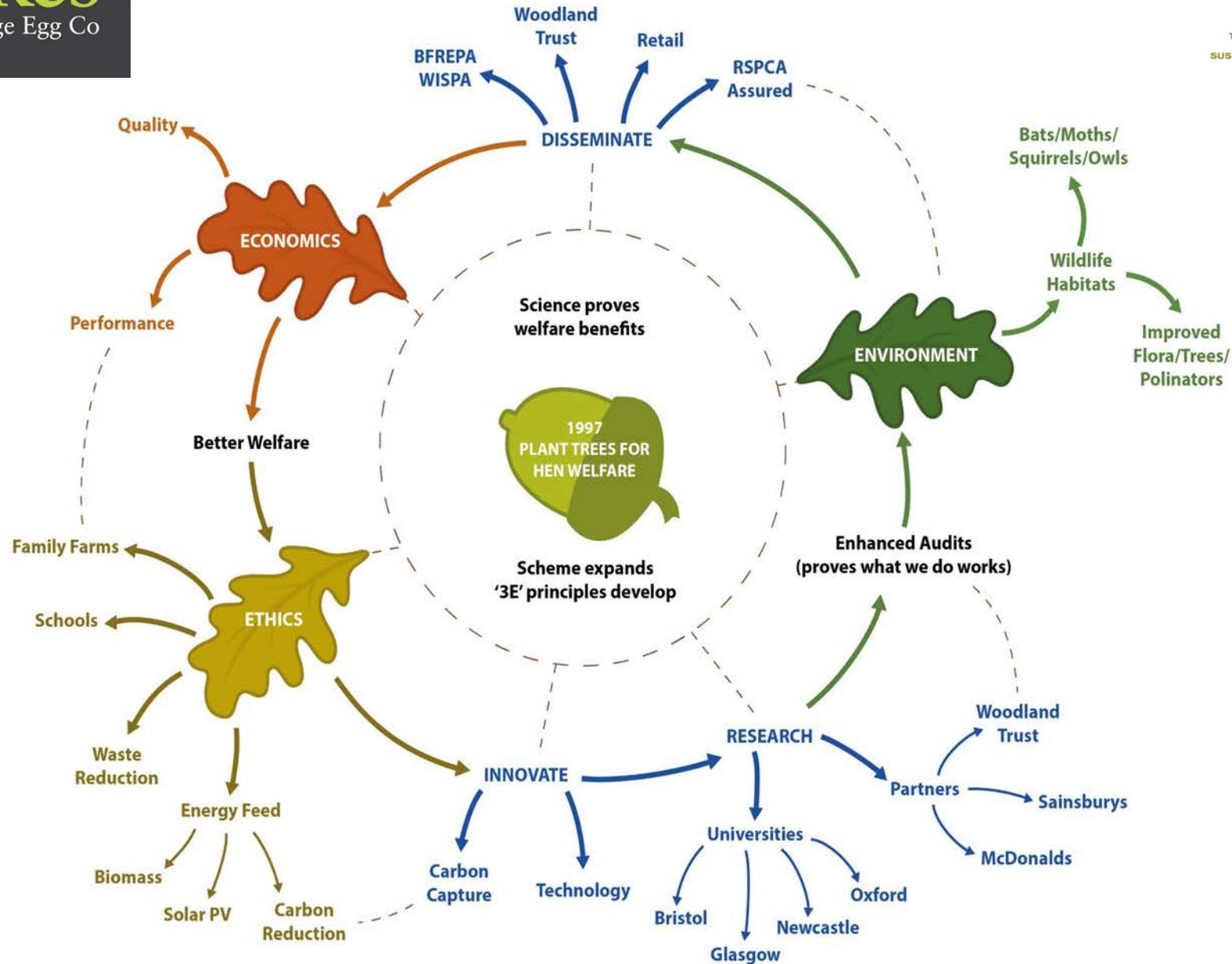




The  
Lakes  
Free Range Egg Co



**OVER 20 YEARS: FROM ACORN TO OAK TREE**



## Challenges

- **All customers want a roadmap, CFO discussion**
- **For farms net zero is impossible**
- **Over 60 approved carbon counters with 80% variation**
- **Govt needs to lead.**
  - **Basic ground rules**
  - **sensible strategy cars 2030**
  - **money on this, wild west**
- **Do we need net zero guess or SBTI 1.5 deg**
- **Millions spent on paint.**

## Case Studies

### Morgan Sindall Infrastructure Project Delivery Perspective

Karen Godfrey

Head of Safety, Health & Environment and Grace  
Moring, Graduate Environmental Advisor.  
Morgan Sindall Ltd



# MORGAN SINDALL

## INFRASTRUCTURE

Leading the way to  
net zero

We believe in connecting people,  
places and communities through  
innovative and responsible  
infrastructure



# Agenda

- Introduction to Morgan Sindall
- What is Responsible Business?
- 25-year partnership with Blenheim Estates.
- Morgan Sindall in Cumbria
- What's next for Net Zero in Cumbria?

# Who are we?



## Construction & Infrastructure

Revenue  
£1,569m



Education, healthcare, commercial, industrial, leisure and retail markets.

[morgan-sindall.com/construction](http://morgan-sindall.com/construction)



Highways, rail, energy, water and nuclear markets.

[morgan-sindall.com/infrastructure](http://morgan-sindall.com/infrastructure)

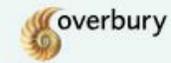
### BakerHicks

Infrastructure includes BakerHicks design activities based out of the UK and Switzerland.

[bakerhicks.com](http://bakerhicks.com)

## Fit Out

Revenue  
£968m



Fit out and refurbishment in commercial, central and local government offices, as well as further education.

[overbury.com](http://overbury.com)

### Morgan Lovell

Office interior design and build services direct to occupiers.

[morganlovell.co.uk](http://morganlovell.co.uk)

## Property Services

Revenue  
£163m



Response and planned maintenance services for social housing and the wider public sector.

[morgan-sindall.com/property-services](http://morgan-sindall.com/property-services)

## Partnership Housing

Revenue  
£696m

### LOVELL

Partnerships with local authorities and housing associations. Mixed-tenure developments, building/developing homes for open market sale and for social/affordable rent, design and build house contracting and planned maintenance and refurbishment.

[corporate.lovell.co.uk](http://corporate.lovell.co.uk)

## Urban Regeneration

Revenue  
£244m

### MUSE

Transforming the urban landscape through partnership working and the development of multi-phase sites and mixed-use regeneration.

[museplaces.com](http://museplaces.com)

# What is Responsible Business?

8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



10 REDUCED INEQUALITIES



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



**“From start to finish, our projects are built with our belief of being a responsible business and delivering change for our people, our environment, communities or UK nuclear ”**

Eldon Garnett  
Managing Director Nuclear



# Blenheim Estates

25-year partnership with Blenheim Estates, Grown in Britain and Nicholson Forestry

- 280,000 trees
- Nine new woodlands
- Changes to air, water and soil monitored, and carbon levels tracked using state of the art technology

## Progress

- Current BNG score between +24.88% and +78.40%
- Designed a 'Centre for Nature
- First Carbon Audit Passed
- Wildflower meadows seeded and thriving



# Our next projects (in progress)

## Great Northern Bog – Peatland Restoration

In partnership with the North Pennines AONB, Yorkshire Peat Partnership and Morgan Sindall Group

- 255 hectares of degraded blanket bog restoration
- 12km of hagg edge re-profiling and turfing
- 170 stone dams, 6 timber dams, 325 coir rolls



## RSPB Lakenheath – Norfolk – Extension and rewetting

Strategic partnership with the RSPB Lakenheath Fen reserve in Norfolk to help them restore existing farmland into a haven for wildlife

66ha of land to be rewetted, including 54ha purchased with support from Morgan Sindall Group

# Morgan Sindall in Cumbria

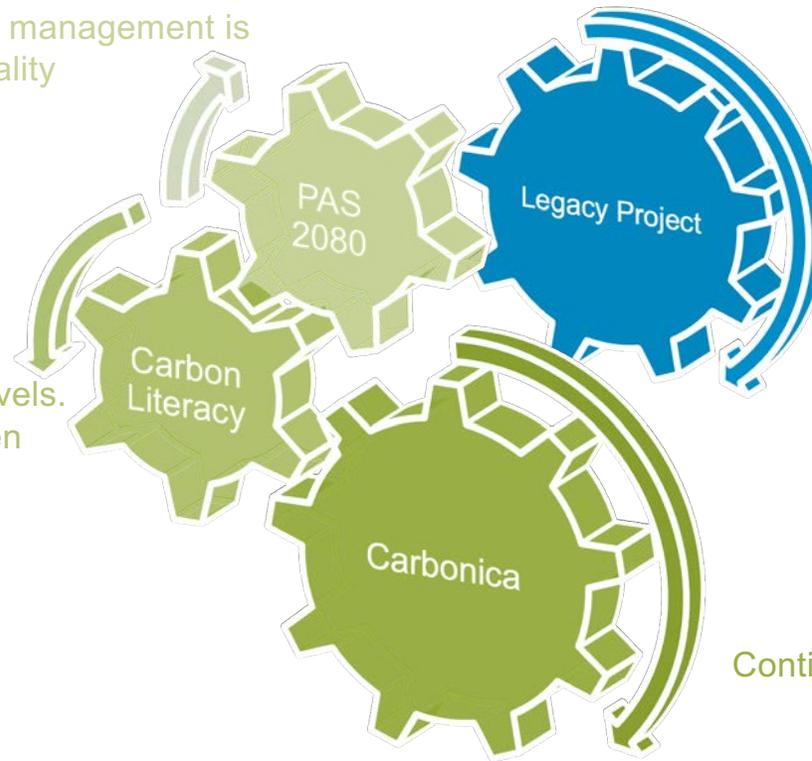
- Work with local supply chain- Green Plant Day
- Wild Ennerdale and Pupil Referral Unit
- Beach clean- Nethertown
- Silver in world green apple awards with work completed in Cumbria (*saved 339.77 tonnes of CO<sub>2</sub>e by switching from diesel to HVO*)
- Energy and water Barrow- divert timber to landfill by donating reusable timber waste to the Dalton Wildlife Centre. 5 tonnes



# What's next?

Obtain PAS 2080 accreditation ensuring carbon management is standardised and of the highest quality

Carbon is everyone's responsibility at all levels.  
Knowledge needs to be shared and given



Develop a legacy project for Cumbria such as Wild Ennnerdale

Continued development, and investment in our whole life Carbon accounting tool

# CUMBRIA

LEADING THE WAY TO NET ZERO

## Q&A Session



## Closing Remarks

