

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



The Leaders' Perspectives

Lisa Brown

Deputy Leader

Cumberland



The Leaders' Perspectives

Lord Inglewood

Chair Cumbria Local Enterprise Partnership



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 11th September 2023

Bryan Davies, Divisional Port Manager, North West & Scotland

bryan.davies@abports.co.uk

Investing in Tomorrow



Marina Wyatt
Chief Financial Officer

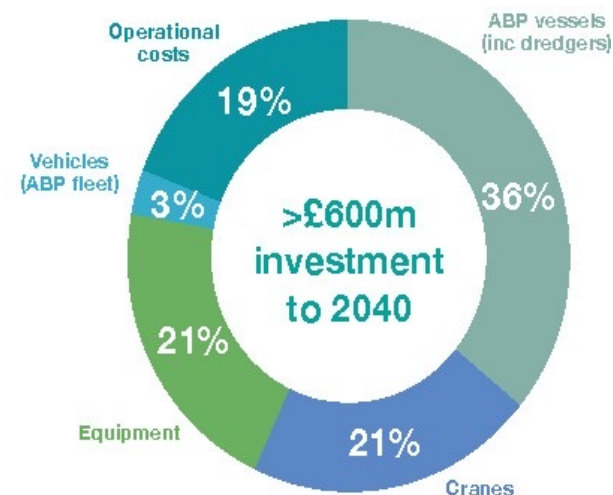
We plan to invest around **£2bn** in decarbonising our own operations and commercial infrastructure projects. We know our investment is affordable and we can deliver it.

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

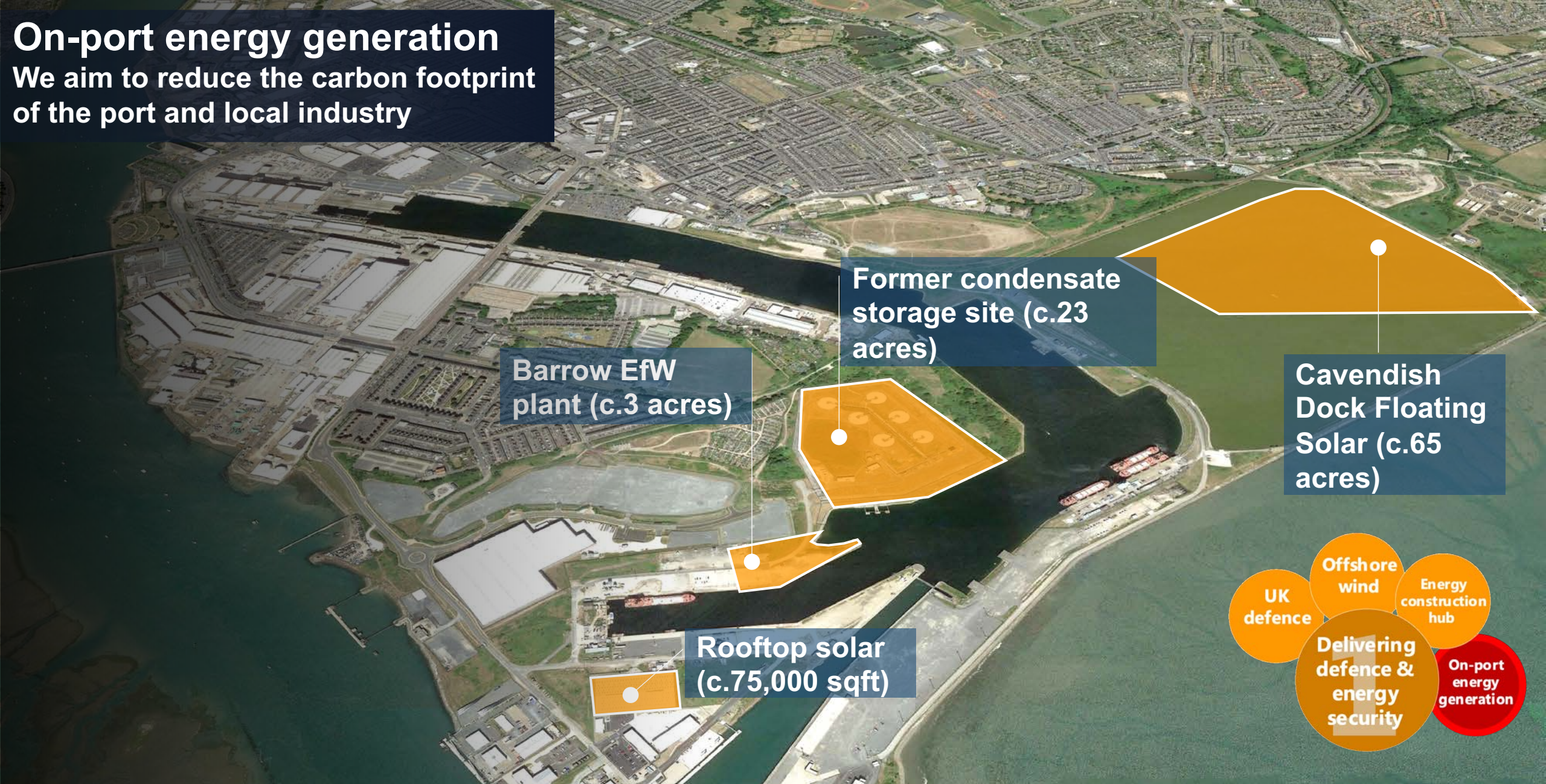
- Barrow
- Ormonde
- Walney (1 & 2)
- West of Duddon Sands
- Walney Extension (3 & 4)



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



Carbon dioxide storage

The port will become a key UK asset in sequestering CO₂ from hard-to-decarbonise industrial processes



CO₂ vessel
berthing jetty



Google Earth

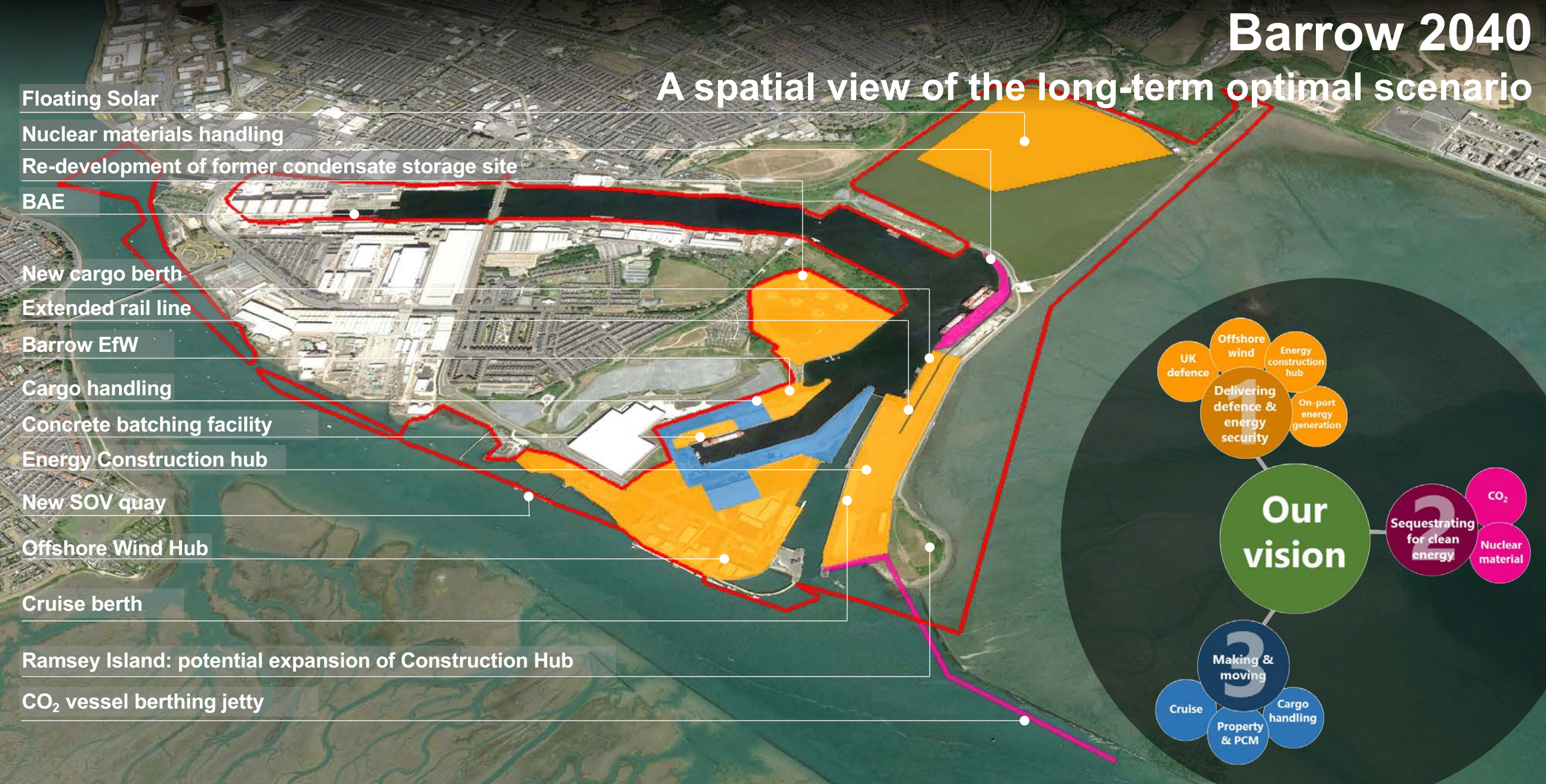
Cargo handling

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

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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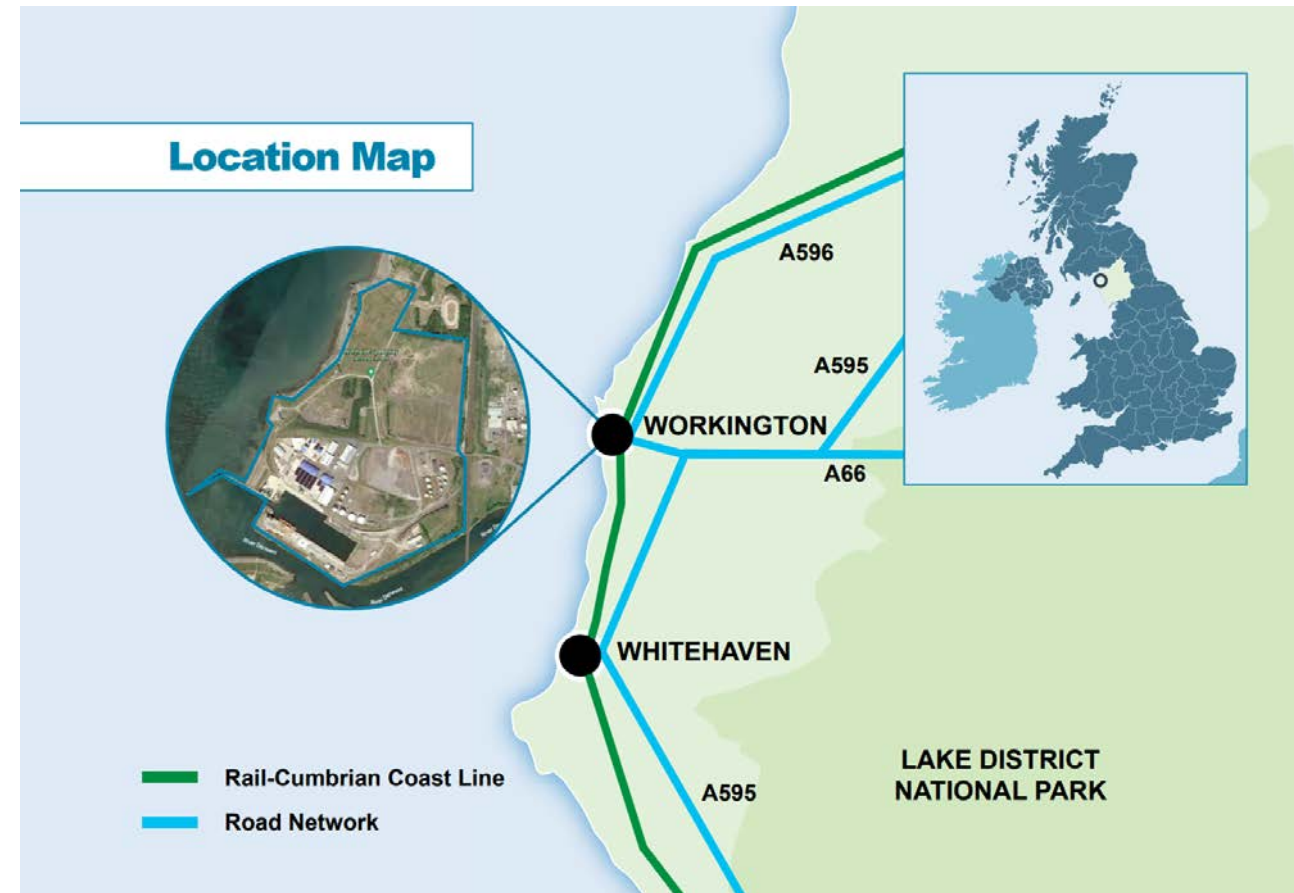
Empowering



Innovative

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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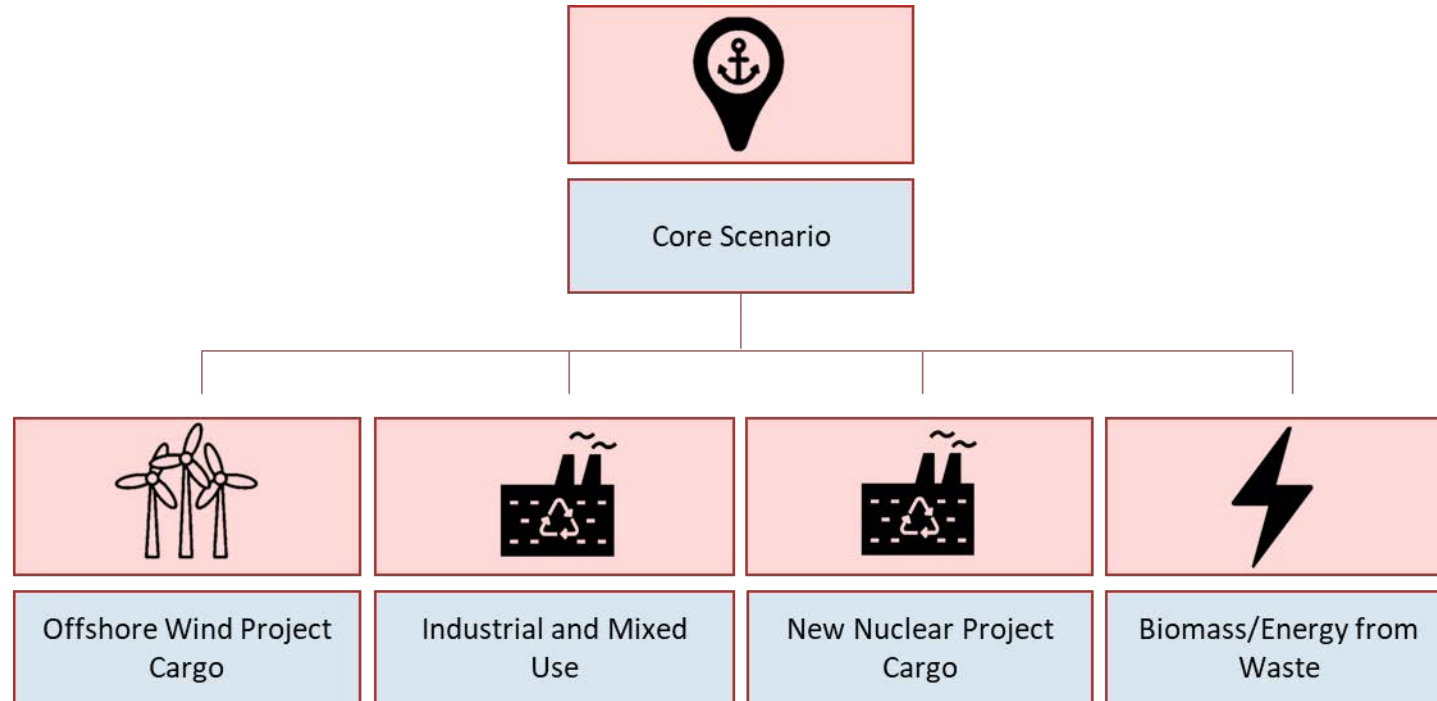


Empowering



Innovative

Port Masterplan



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)



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

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Compassion



e Empowering



Innovative

Future Scenarios

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



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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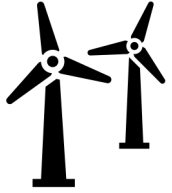
Empowering



Innovative

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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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*.

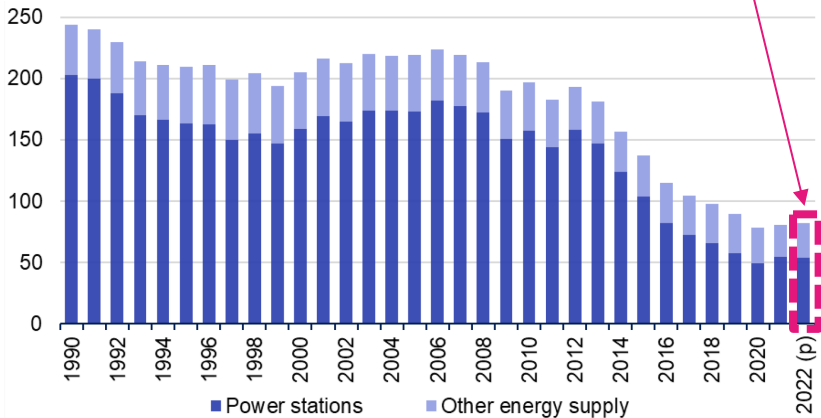
- **Energy Supply:** gas fired power stations primary contribution to UK emissions following decade of decarbonisation and switch from coal;
- **Business:** includes agricultural and industrial processes as well as commercial building heating and cooling
- **Transport:** combustion of petroleum-based 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) 6th 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.

*Gas example assumes 2,200L of CO2 at atmospheric pressure would compress to 0.0035M3 at 120 bar of pressure. For tree coverage this takes the [IPCC estimate](#) of between 1.5-4.5TCO2/ha/year sequestration potential of new forest in temperate region. England is approximately 13m hectares.

	2021 (MtCO ₂)	2022 (MtCO ₂)	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%
Total CO₂	341.5	346.0	1.3%

UK weather adjusted UK national greenhouse gas emissions 2021 and 2022



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
Assets		
Cash and balances at bank		130
Loans	4, 5	96,245
Total assets		96,375

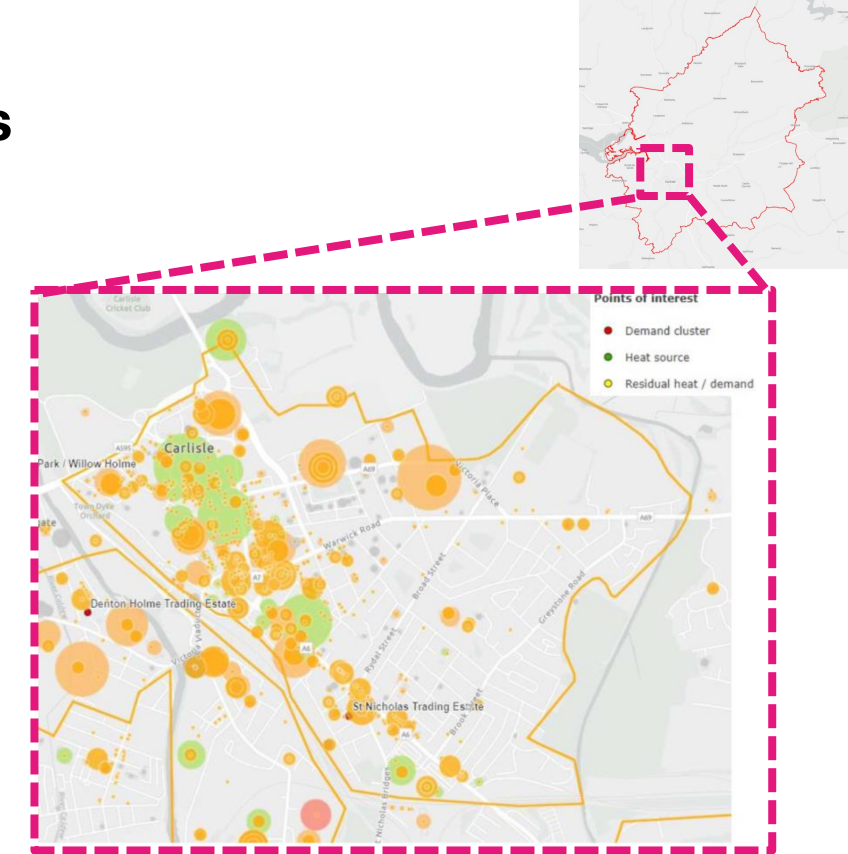
HM Treasury has subsequently enacted via statutory instrument section 112 of the Finance Act 2020, on 12 May 2022, amending the National Loans Act 1968 to increase the overall PWLB lending limit from £95 billion to £115 billion.

[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
Total	3,780	154,776	141,112	13,664	99,436

Heating 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

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www.gov.uk/beis | 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



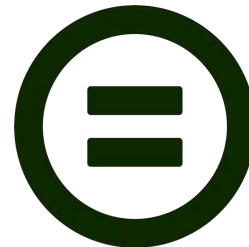


CUMBRIA NET ZERO EVENT

11th September 2023



Department for
Energy Security
& Net Zero



NORTH WEST
ROUTE TO NET ZERO



Liverpool
City Region

Cumbria

Lancashire

Greater
Manchester

Cheshire
& Warrington



Lancashire
Enterprise Partnership

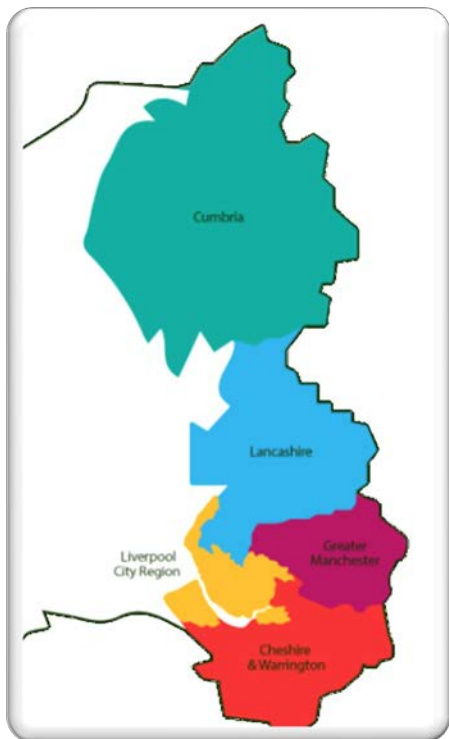


LIVERPOOL
CITY REGION
COMBINED AUTHORITY

GMCA GREATER
MANCHESTER
COMBINED
AUTHORITY

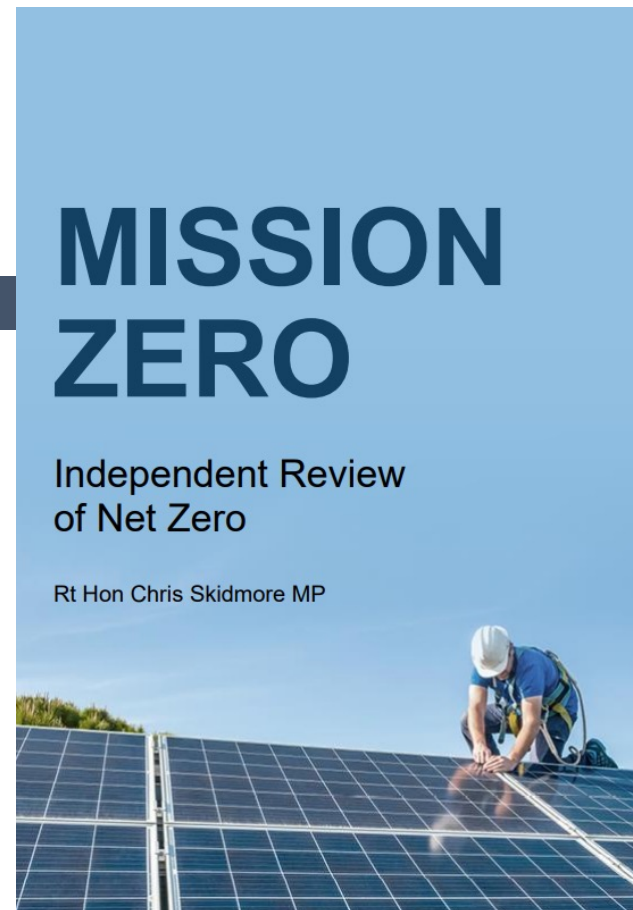


Cheshire and Warrington
Local Enterprise Partnership



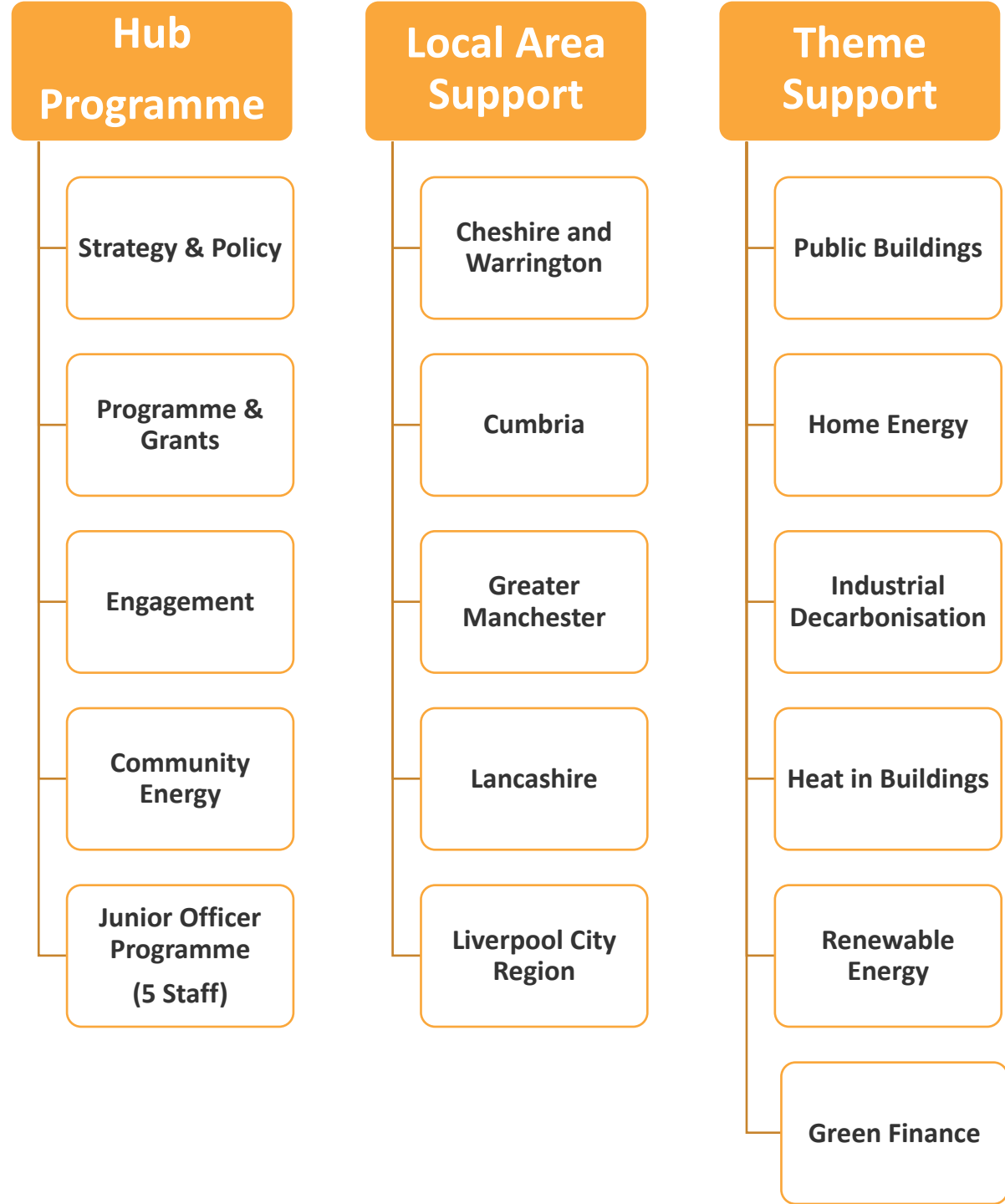
Department for
Energy Security
& Net Zero



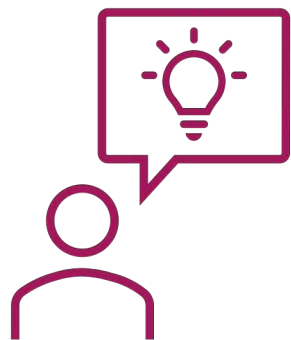




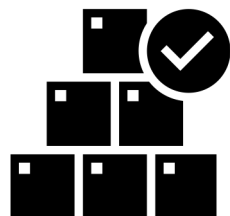
TECHNICAL SUPPORT PROGRAMME



Objectives for Intervention on Buildings



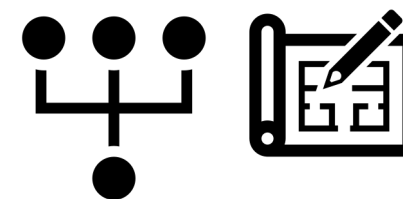
Knowledge Exchange



Best Practice
Information Hub



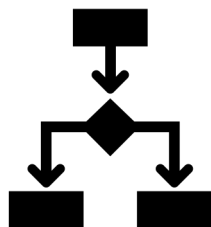
Estates Analysis and
Project Identification



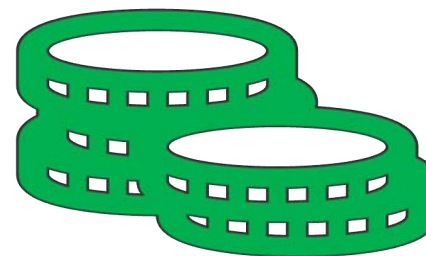
Transition Project
Planning



Specialist Support



Procurement Advice
Opportunity Mapping



Green Financing Options



Collaboration

A Credible, Competent Capacity to Support Net Zero Transition

www.es.catapult.org.uk/tools-and-labs/our-place-net-zero-toolkit/net-zero-go/



What we do ▾

Work with us ▾

Models, Tools & Labs ▾

News, Reports & Events ▾

About Us ▾

Contact

🔍 Our Catapults ≡



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

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....](#)

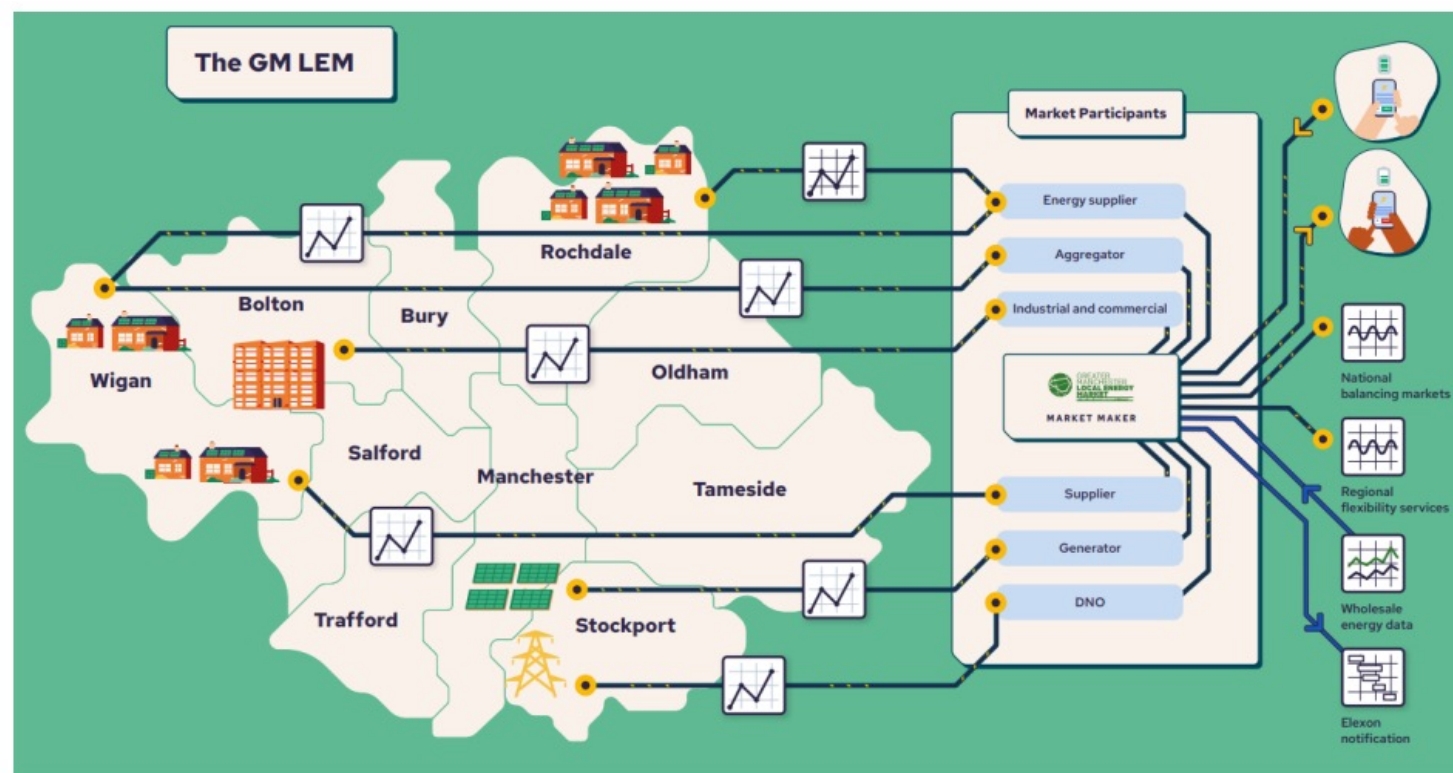
Carbon Stories



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

☐ **Linkedin**

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

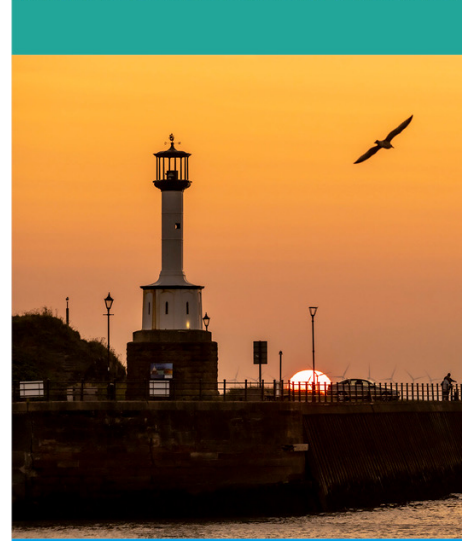
A Cumbrian Perspective

Karen Mitchell

Chief Executive

Cumbria Action for Sustainability & Co Chair Zero

Carbon Cumbria Partnership



CUMBRIA

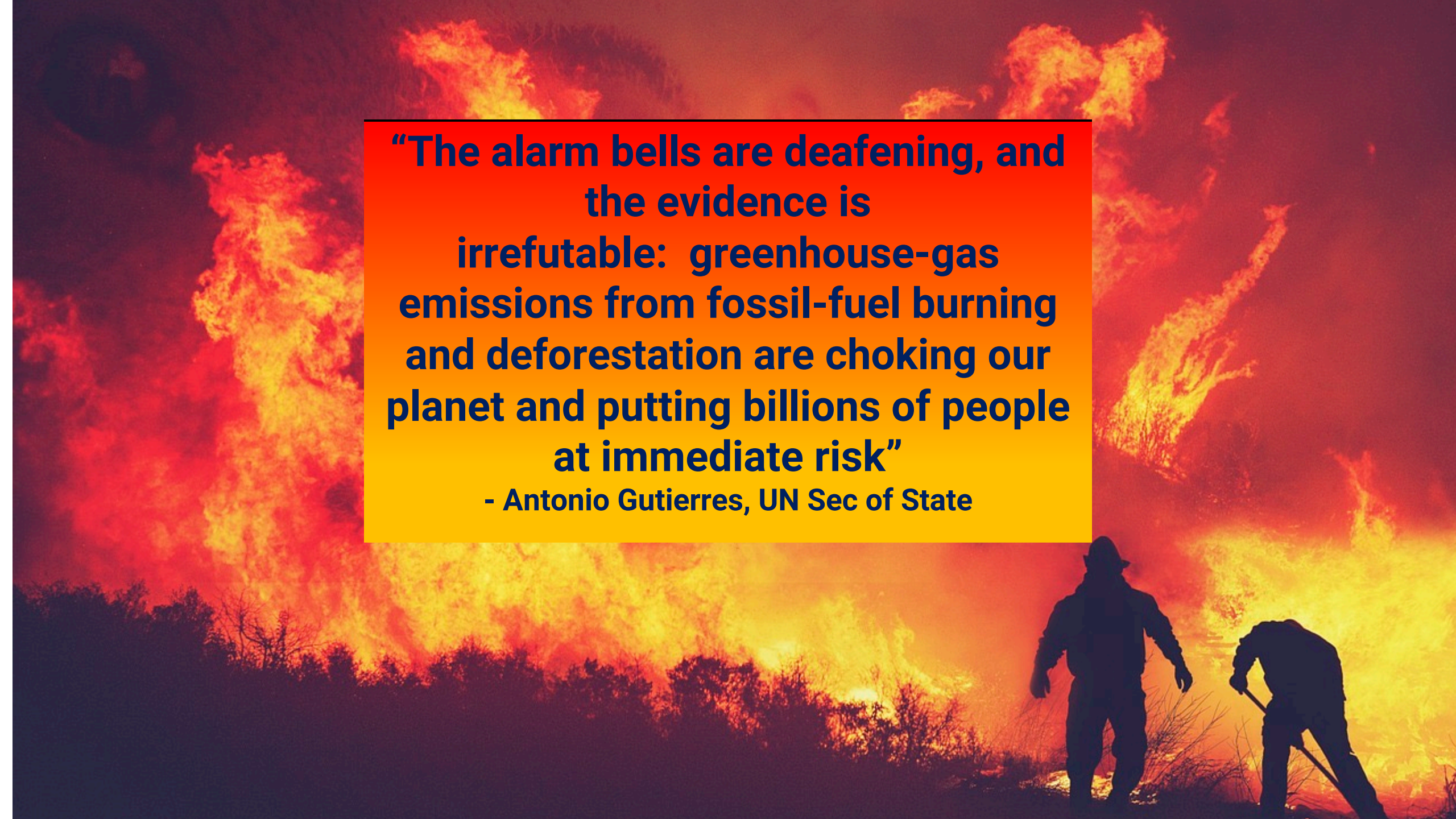
LEAD

TOWARDS ZERO



Karen Mitchell
Chief executive, CAfS
Co-chair, ZCCP

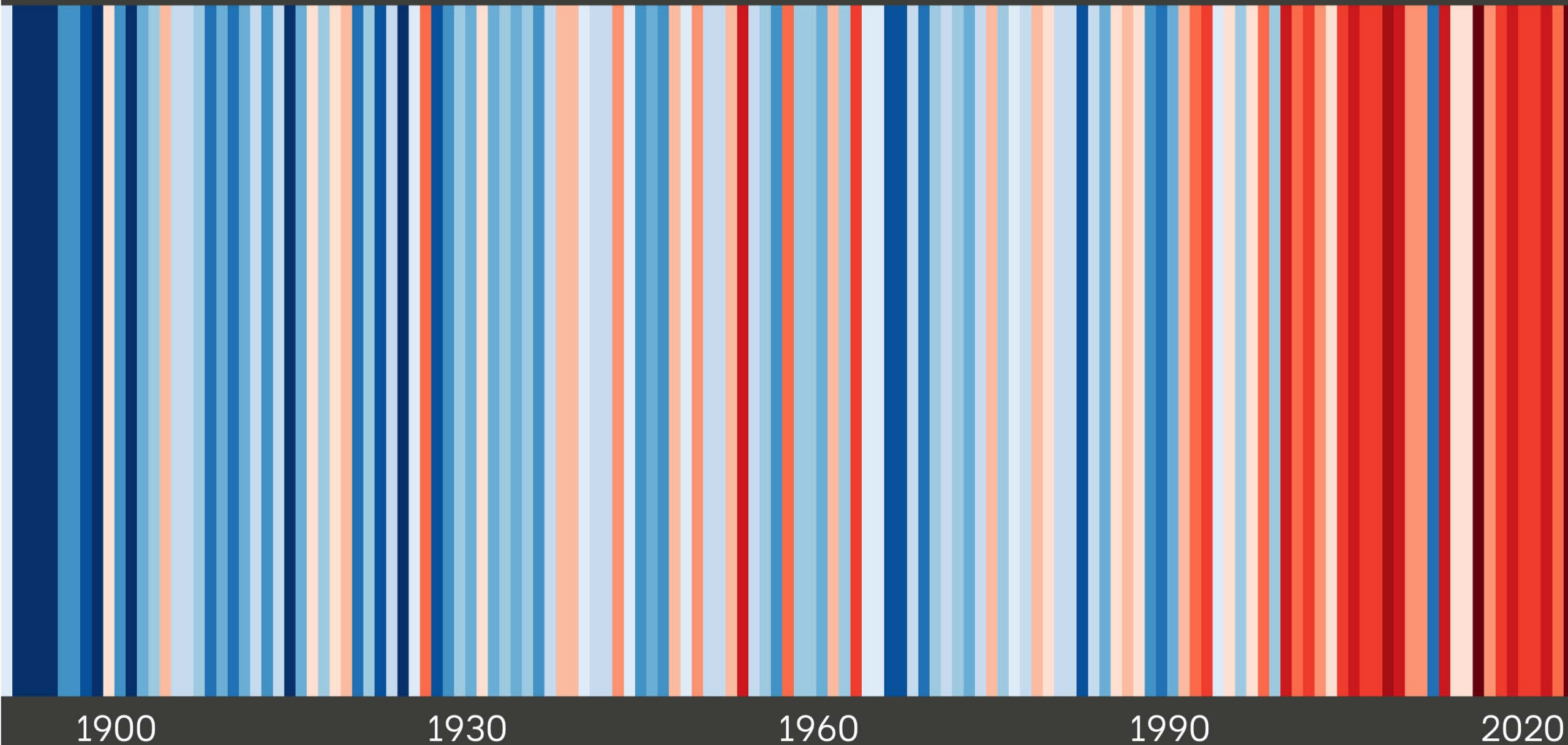




**“The alarm bells are deafening, and
the evidence is
irrefutable: greenhouse-gas
emissions from fossil-fuel burning
and deforestation are choking our
planet and putting billions of people
at immediate risk”**

- Antonio Gutierres, UN Sec of State

Annual Temperature Change Since 1884 CUMBRIA



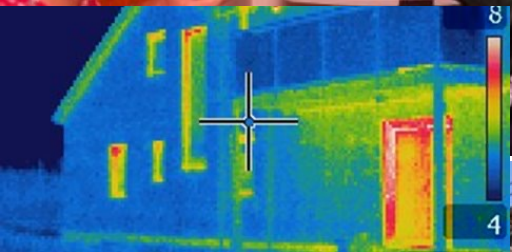
1900

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.

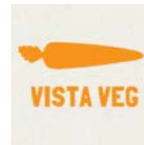


Cumbrian Youth Voices on the Climate Crisis





Cumbria Woodlands



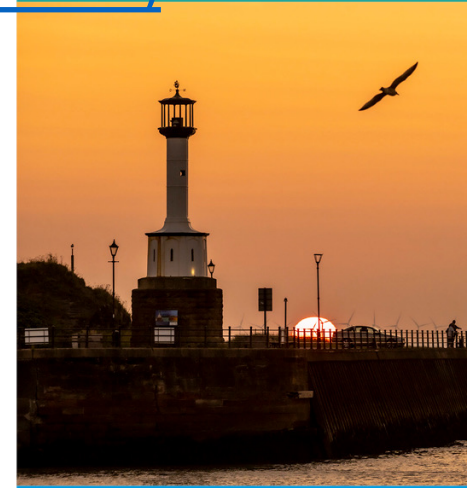
Working towards a zero carbon Cumbria by 2037

JUNE 2023

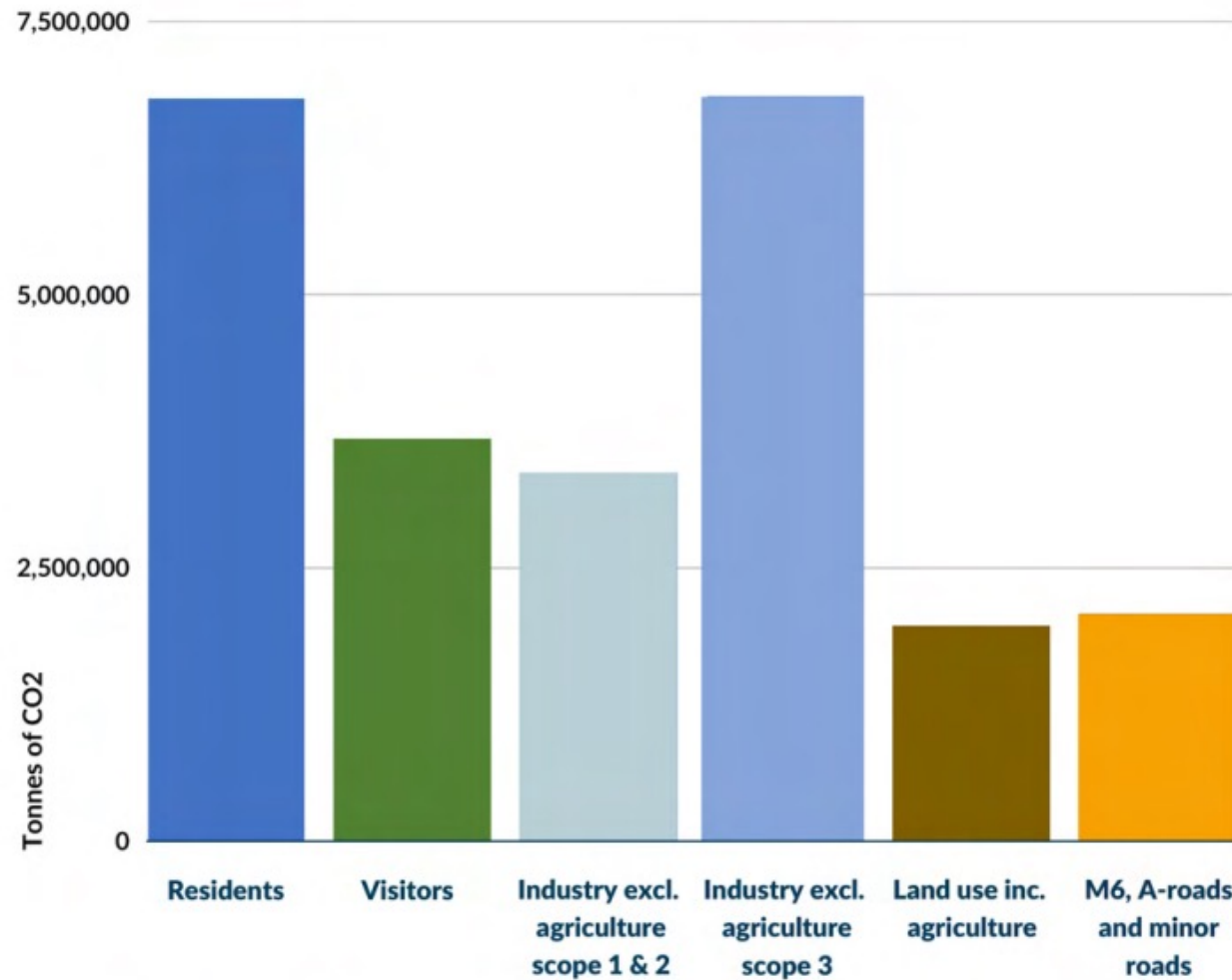
SUMMARY OF GREENHOUSE GAS EMISSIONS IN CUMBRIA AND TRAJECTORIES TOWARDS NET ZERO



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



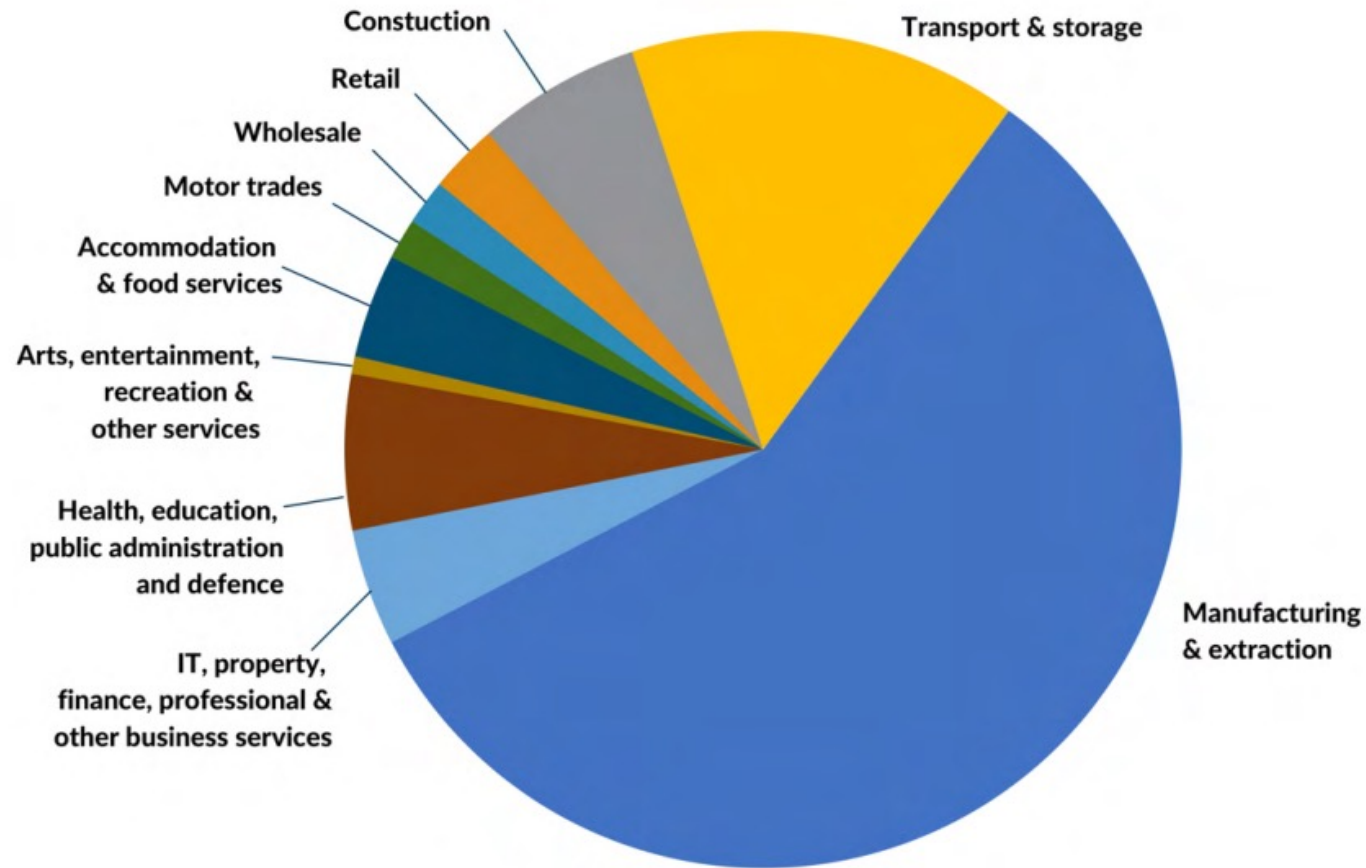
Greenhouse Gas Emissions in Cumbria (2019)



Sources of Greenhouse Gas Emissions in Cumbria (2019)

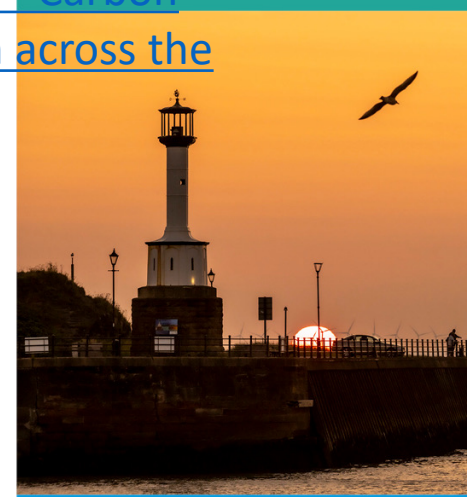


Greenhouse Gas Emissions in Cumbria (2019)



Cumbria's emissions from industry and other businesses, excluding agriculture (2019) Total: 10.2 MtCO₂e

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



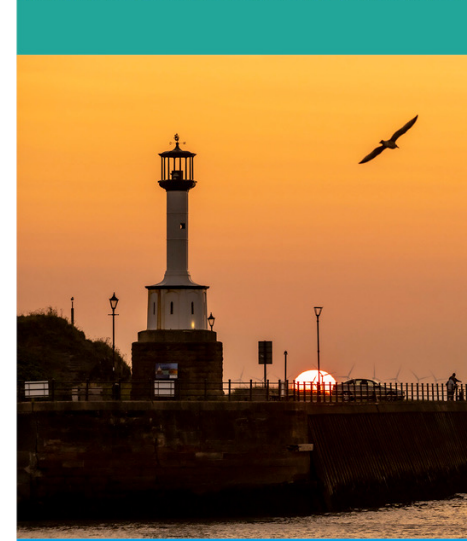
**TRANSPORT
AND
MOBILITY**



**CONSUMPTION,
WASTE AND THE
CIRCULAR
ECONOMY**



**FARMING
AND OTHER
LAND USE**





SOMEONE
DO SOMETHING
ABOUT CLIMATE
CHANGE!

WHAT ARE YOU
LOOKING AT?

SOMEONE

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

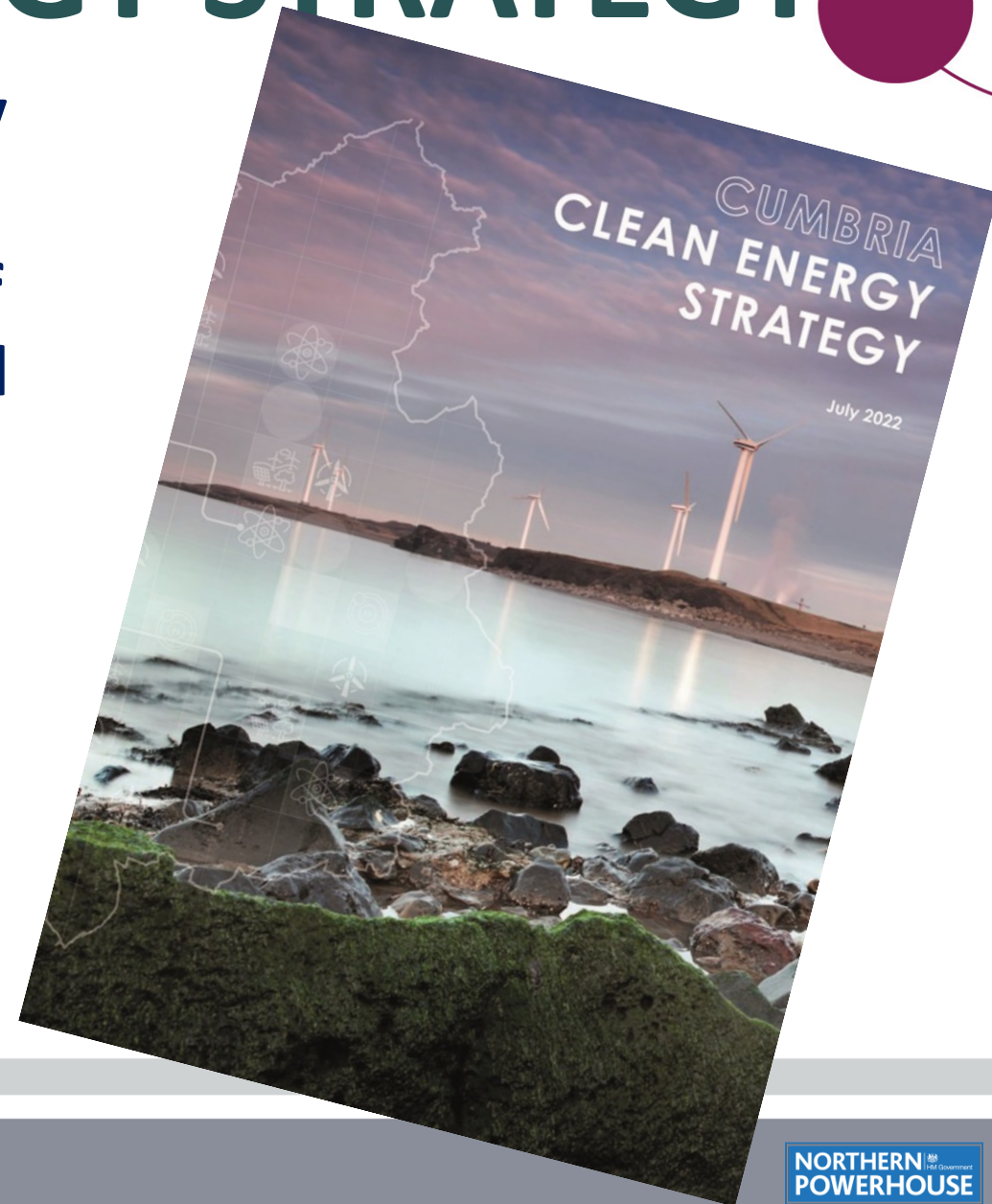


CUMBRIA
LOCAL
ENTERPRISE
PARTNERSHIP

**NORTHERN
POWERHOUSE**

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

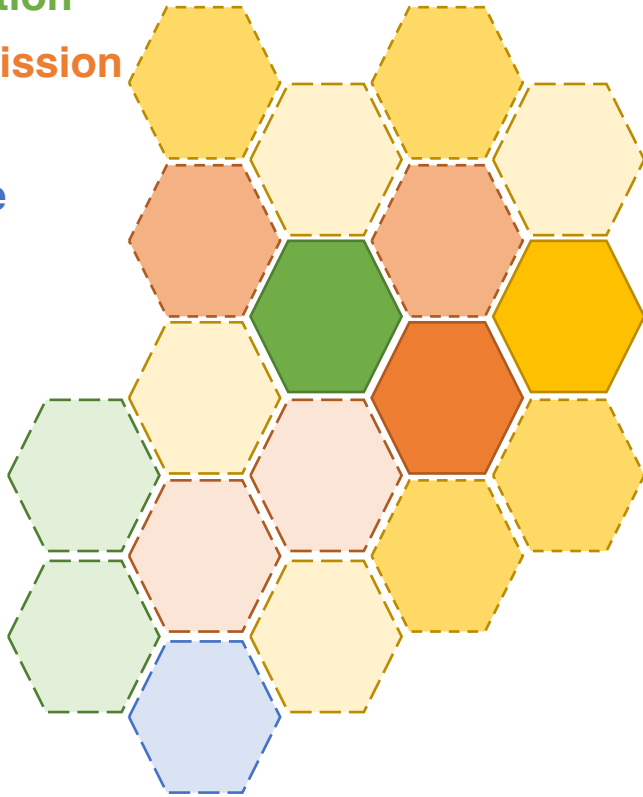
- Three highly mature projects invited for negotiation in the first subsidy allocation round for green hydrogen (HAR1).
- Focus on large industrial gas users with low barrier to making dual-fuel switch.
- Supporting the government's target for 5GW of electrolytic production by 2030 and over 500MW by 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)

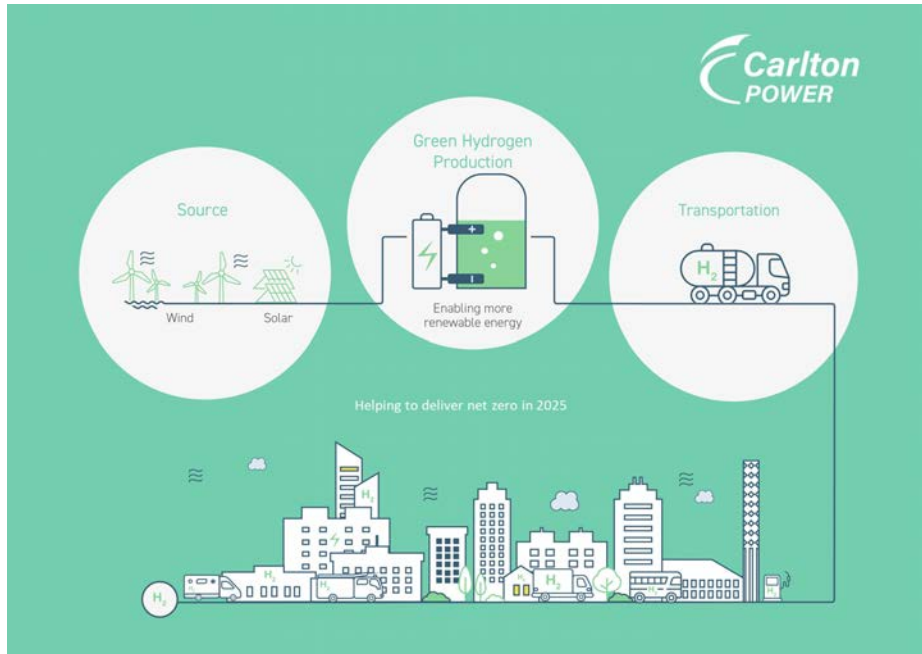
A combination of small AND large projects will be needed



Summary

- 30MW plant underpinned by large multinational anchor offtaker, Kimberly Clark, who are committed to taking 100% of the hydrogen initially produced.
- Growth potential for up to 200MW with known offtakers engaged.
- Grid connection and land rights secured
- Planning permission for Hydrogen Production Facility granted
- Planning permission for Hydrogen Pipeline granted
- 23,400 tonnes CO₂ emissions avoided
- MoU with Cadent Gas, Electricity North West and Cumbria Local Enterprise Partnership and Barrow Borough Council
- <https://www.barrowgreenhydrogen.co.uk/>

Summary

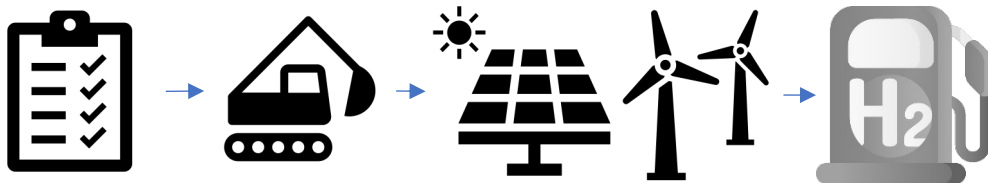


Key Dates

- 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 H₂ production capacity
- Reduction of ca. 50,000 tonnes CO₂ per annum



Eric Adams – Projects Director

✉ eadams@carltonpower.co.uk

☎ 07803 085942

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

Case Studies

Morecambe Net Zero Carbon Storage Scheme

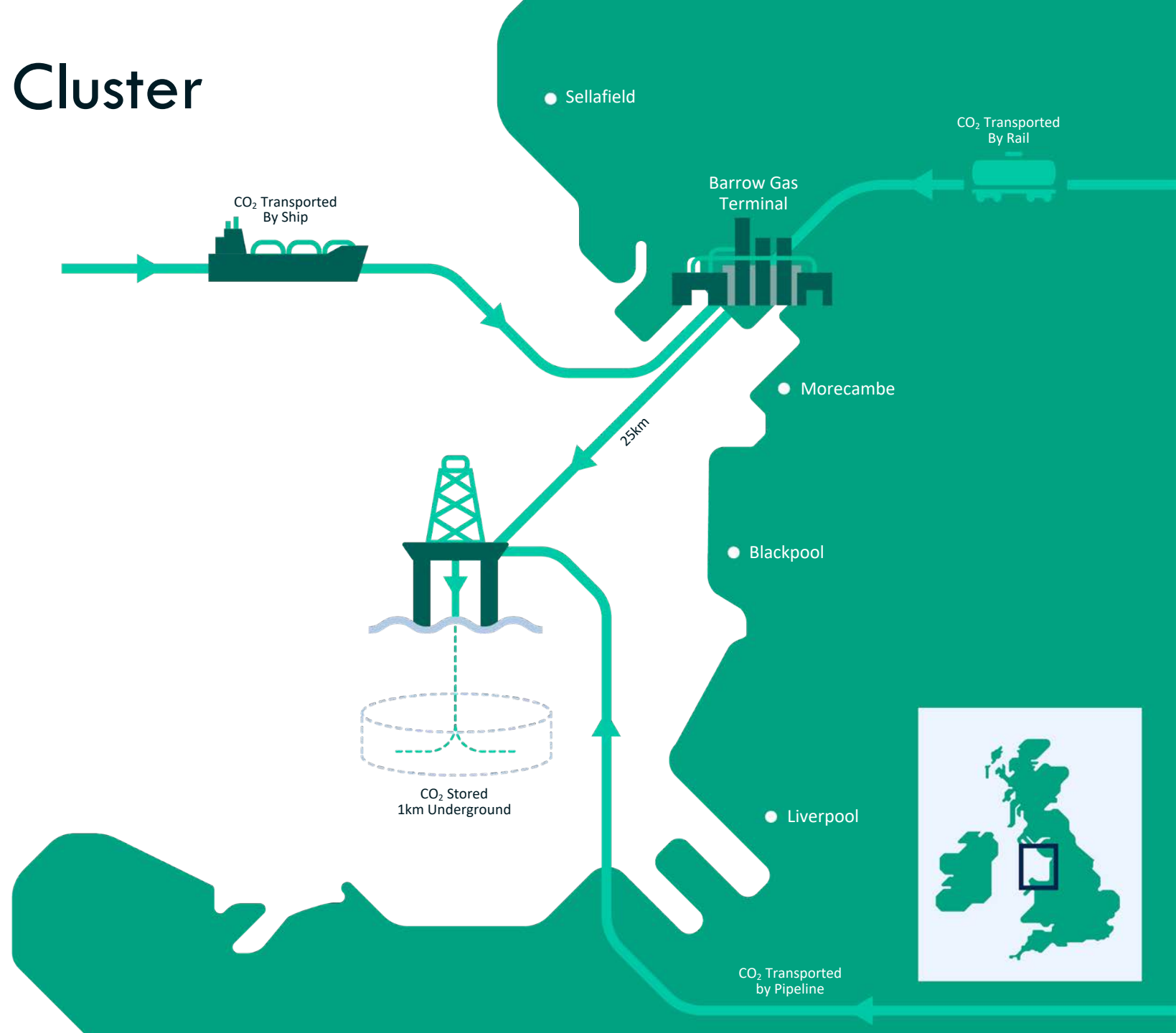
Richard Peace
Energy Transition Director
Spirit Energy



Morecambe Net Zero Cluster

Storage at scale by 2030

- **Scale** – One gigaton of CO₂ 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

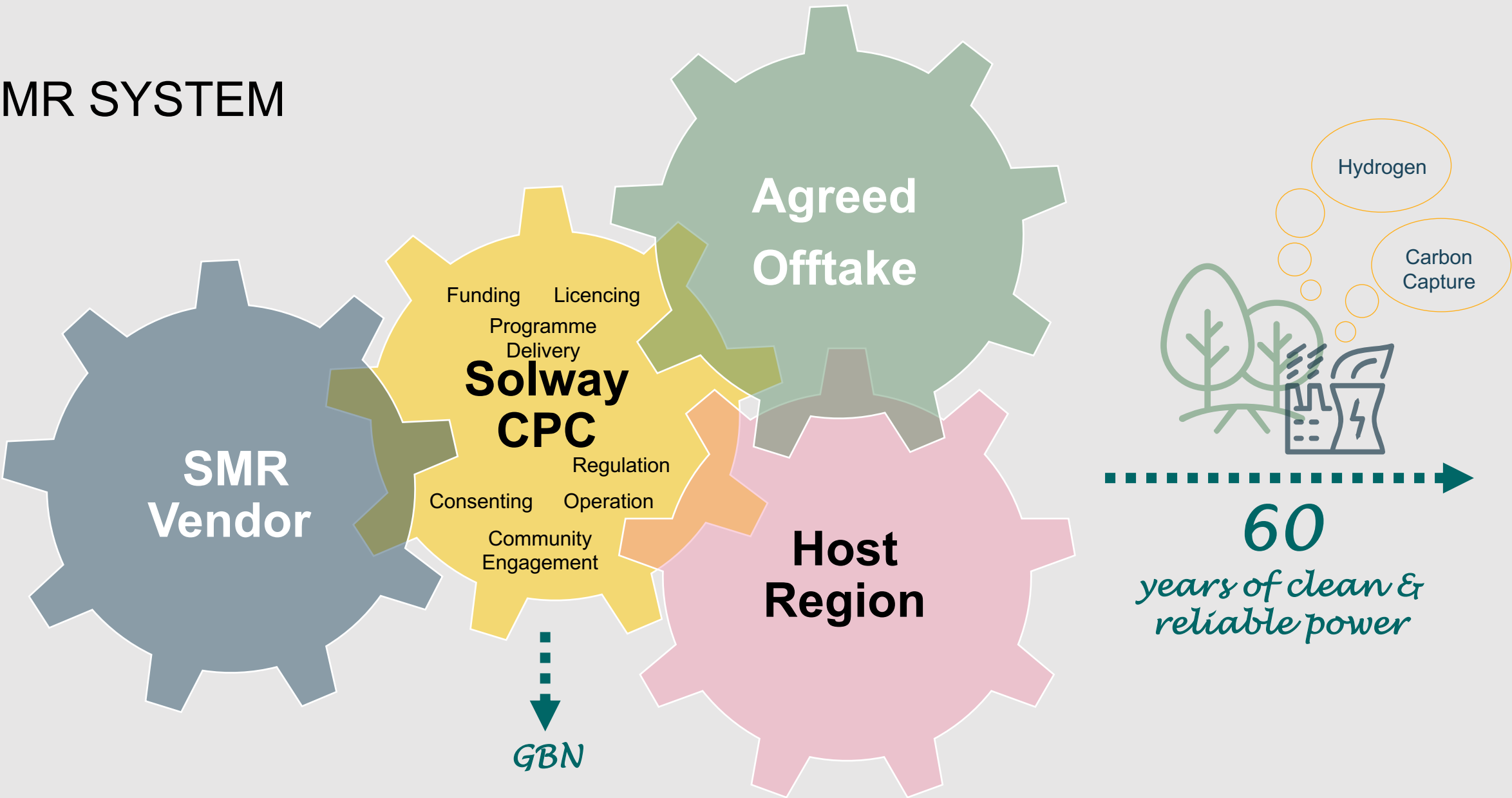
The solution is known

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

However, there is a gap...

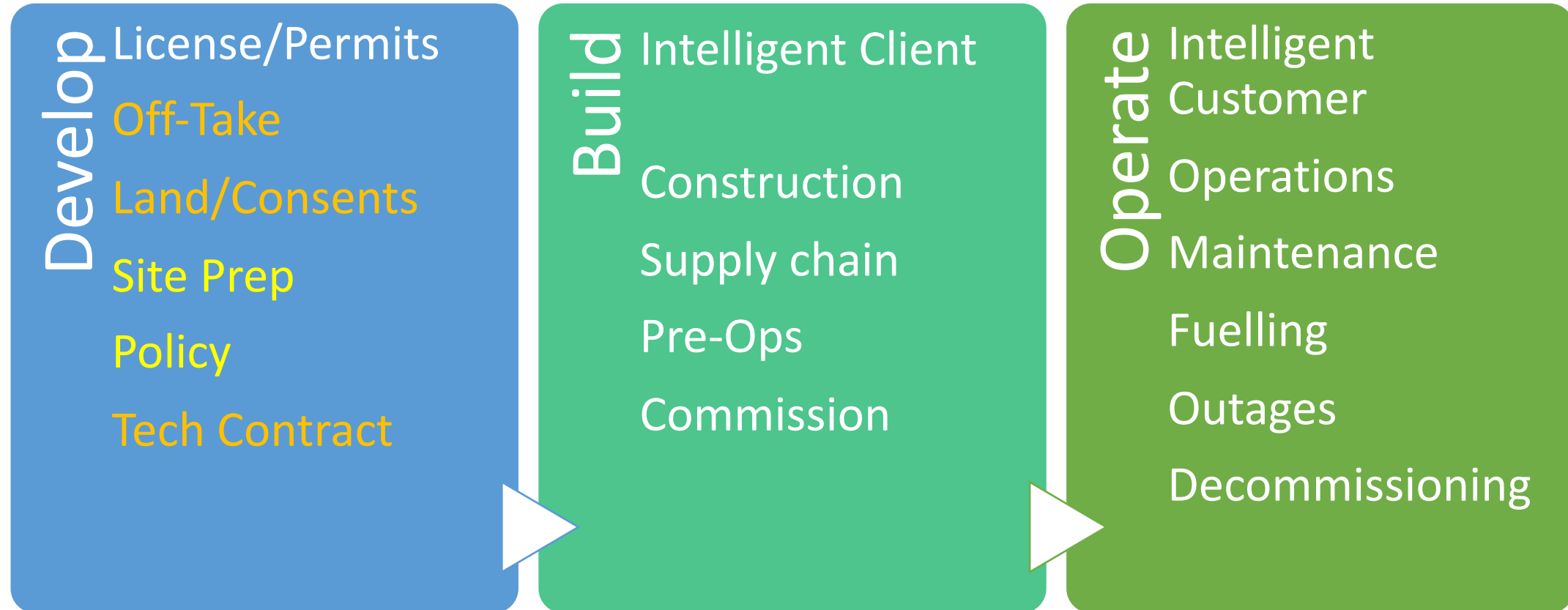
- **Technology Purchaser**
- **Permitted and Licensed Operator**
- **Delivery of the Community Mandate**

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

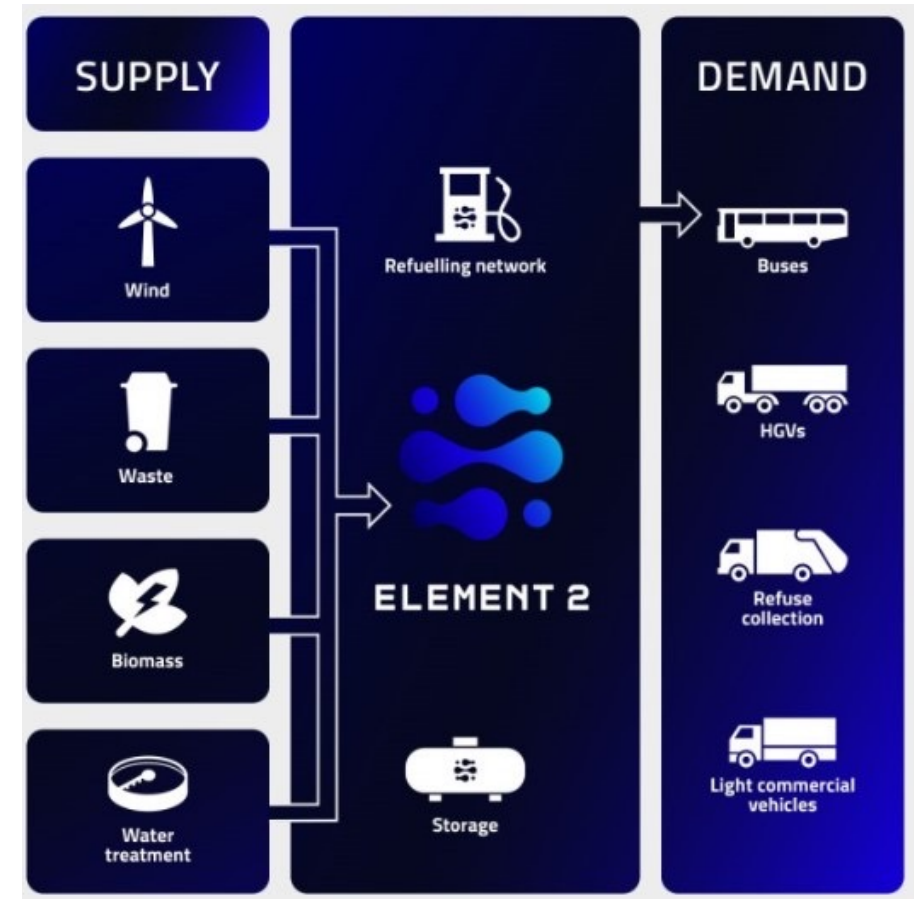
nick.shelley@element-2.co.uk

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](#)

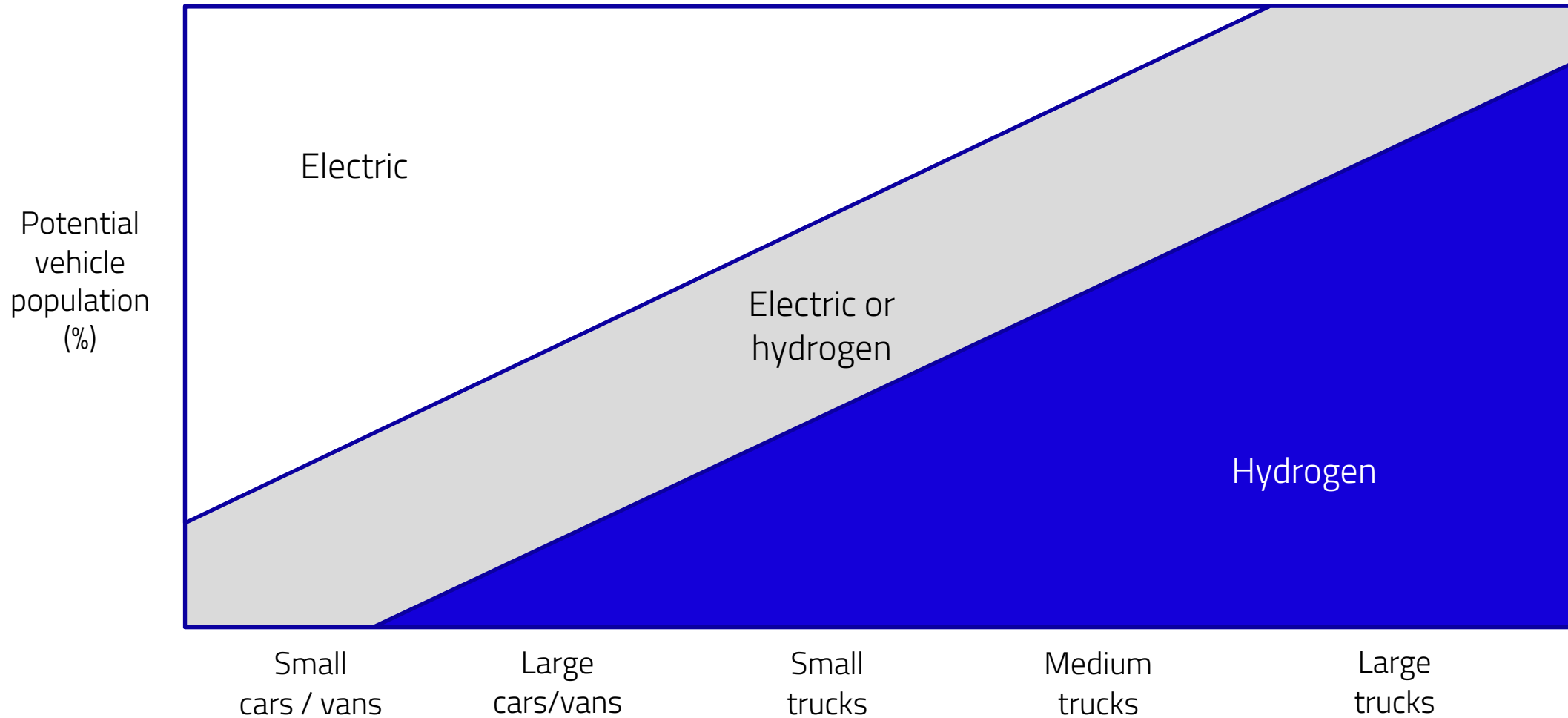
[HYDROGEN SAFETY - YouTube](#)

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		

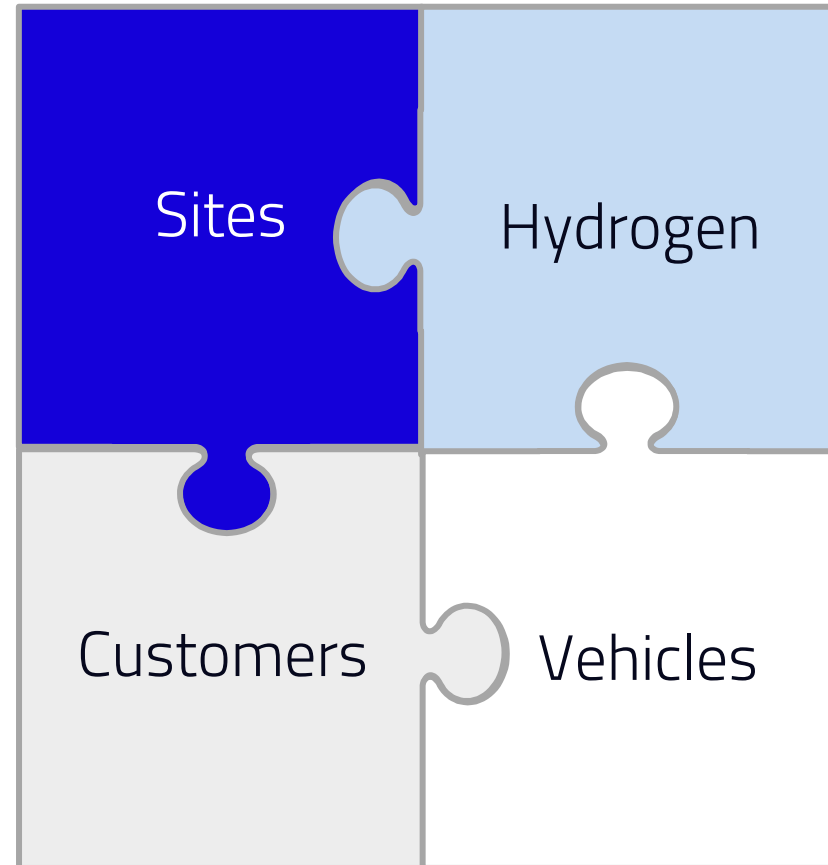
The potential for Cumbria

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

Q&A Session



Business Decarbonisation

Claire Deekes

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



BUSINESS DECARBONISATION

September 2023

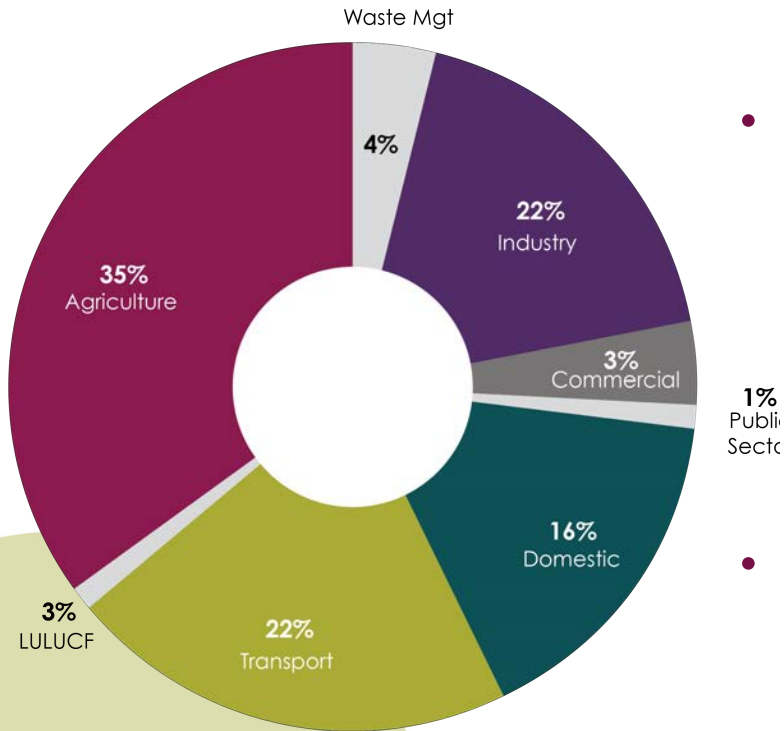
**Claire Deekes Chief Customer Officer, Cumberland Building Society &
Chair of CLEP Business Decarbonisation Strategy Group**

CLEP

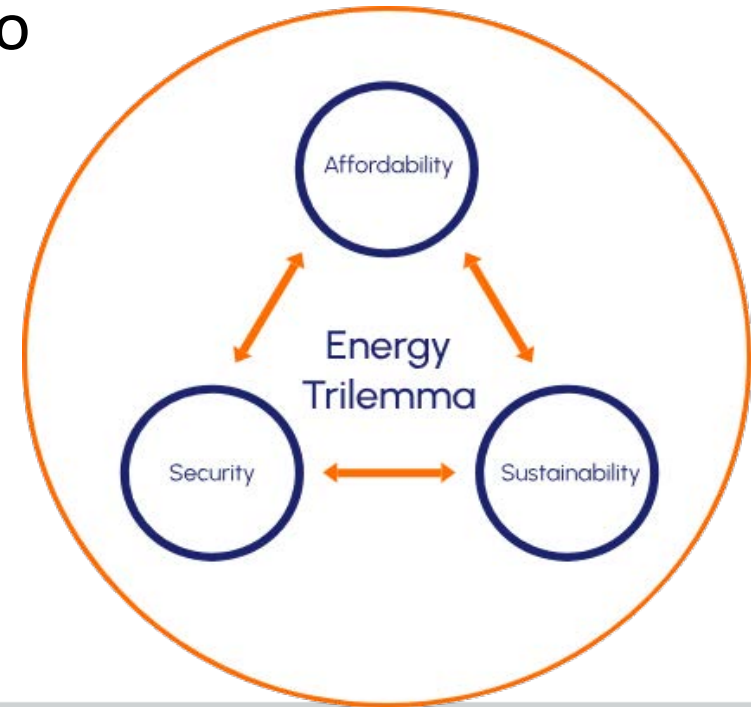
CUMBRIA
LOCAL
ENTERPRISE
PARTNERSHIP

**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.

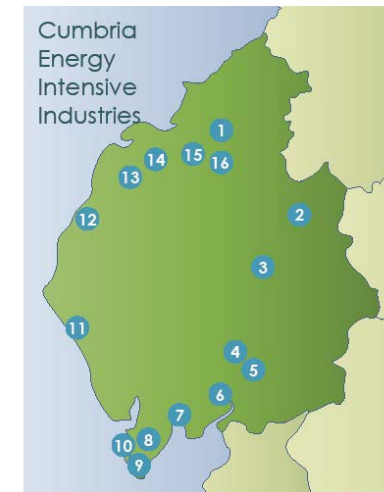
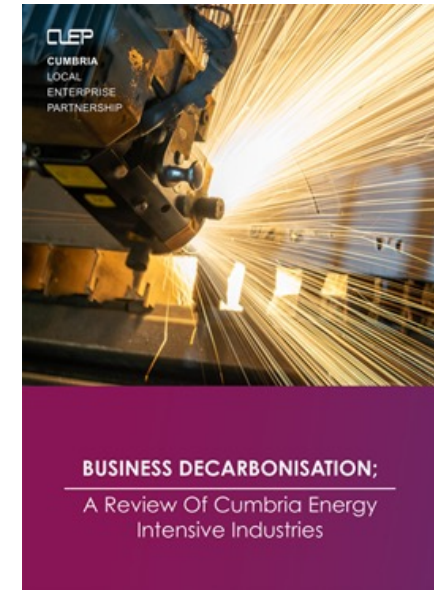
8 Accreditation and Training
Provide advice for decarbonisation training programmes and benchmarking accreditation schemes.

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	3SK
8	Kimberly-Clark
9	SPIRIT ENERGY
10	BAE SYSTEMS
11	Skelfield Ltd
12	HOLMEN IGGESUND
13	East of Cumbria
14	INNNOVA FUTAMURA
15	PIRELLI
16	STAY AT THE 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

Continued investment in new technologies and equipment
to improve production efficiency and 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.

METHOD

*Development of a new
business model and capability
to utilise industrial waste
gases to produce affordable
feedstocks and chemicals for
use in the production
of consumer products
in the UK.*

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



*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

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



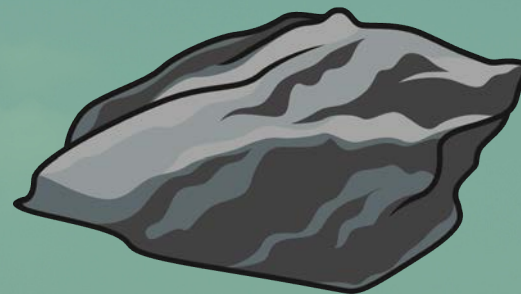
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STONE QUARRIES



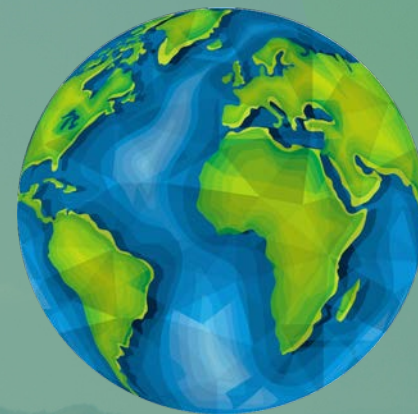
180+

YEARS



9

STONES



GLOBAL REACH

ZERO WASTE



CONCRETE PLANT



INERT LANDFILL



SAND QUARRY

REDUCE
REUSE
RECYCLE

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
- 1300m²
- 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

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

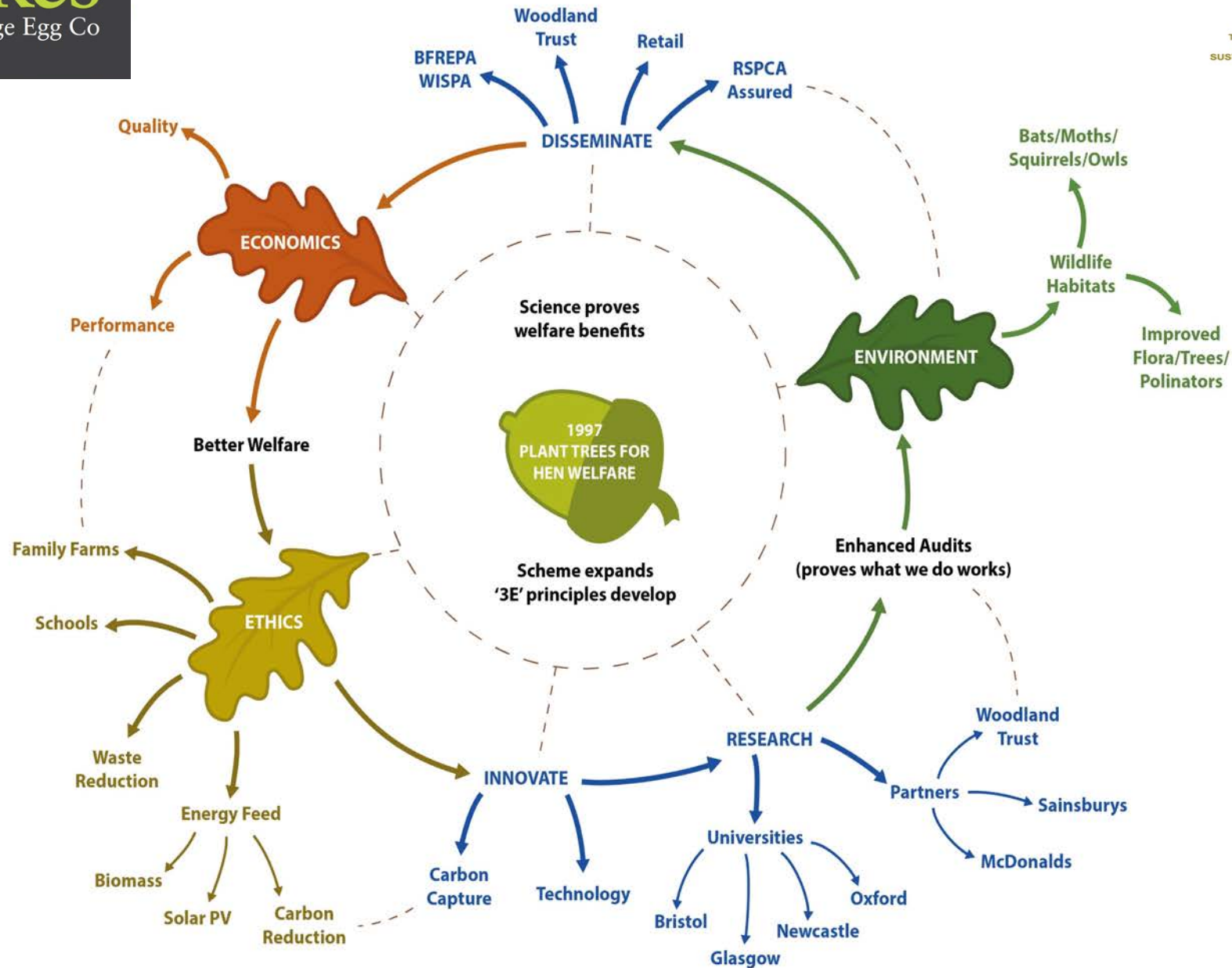




The
Lakes
Free Range Egg Co



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?



**MORGAN
SINDALL
GROUP**

Construction & Infrastructure

Revenue
£1,569m

**MORGAN
SINDALL**
CONSTRUCTION

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

morgansindallconstruction.com

**MORGAN
SINDALL**
INFRASTRUCTURE

Highways, rail, energy, water and nuclear markets.

morgansindallinfrastructure.com


BakerHicks

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

bakerhicks.com

Fit Out

Revenue
£968m

 **overbury**

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

overbury.com

Morgan Lovell

Office interior design and build services direct to occupiers.

morganlovell.co.uk

Property Services

Revenue
£163m

**MORGAN
SINDALL**
PROPERTY SERVICES

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

morgansindallpropertyservices.com

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

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

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

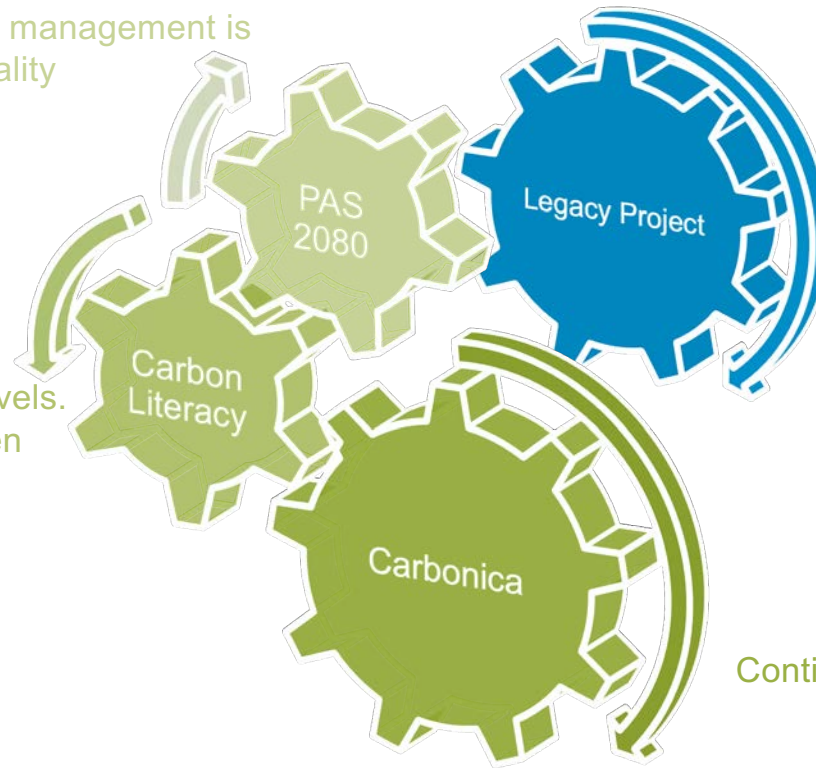
- Work with local supply chain- Green Plant Day
- Wild Ennerdale and Pupil Referral Unit
- Beach clean- Nethertown
- Silver in world green apple awards with work completed in Cumbria (*saved 339.77 tonnes of CO₂e by switching from diesel to HVO*)
- Energy and water Barrow- divert timber to landfill by 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

Q&A Session



Closing Remarks

