North East England
Chamber of Commerce

Climate change

Introduction

This document brings together businesses of different sizes and sectors across the North East who are involved in innovative work around sustainability. From electric vehicles to renewable energy and innovative research many businesses are all working to help the environment.

“The North East is already a leader in sustainability with many key assets around renewable energy and innovation in green technology. Investment to build on the North East’s green infrastructure as we come out of the coronavirus crisis will be essential in reaching our net zero targets as well as creating new jobs and allowing the North East to contribute to the UK’s economic recovery.”

– James Ramsbotham, Chief Executive,
North East England Chamber of Chamber of Commerce

“As we develop our recovery plans for how our economy and our nation can move out of the current crisis, we have to do so in a way that also prepares ourselves for the even bigger challenge, that of combatting climate change.”

- **North East England Climate Coalition**

Lanchester Wines

We believe every business has a duty of care to minimise its impact on the environment, which is why the Lanchester group of companies (including Lanchester Wines and Greencroft Bottling) has worked tirelessly over the last decade to ensure sustainability is at our core.

There is, unfortunately, no 'one size fits all' solution when it comes to sustainability and so we've invested considerably to identify which changes we can make to lessen our effect on our planet.

Our greatest opportunity to make a change is through minimising our reliance on fossil fuels. As such, we've invested over £8million in renewable heat and energy generation at our sites across the North East of England and today our business is powered almost completely by renewable wind and solar energy.

- Our four wind turbines produce around 5.5million kWh (kilowatt hours) of clean, renewable electricity per year. We use around 42% of this electricity to run operations at our Greencroft Estate (including Lanchester Wines, Greencroft Bottling and Lanchester Gifts) with the remaining electricity – enough to power 800 three bedroom homes - feeding into the National Grid for use within our local community.

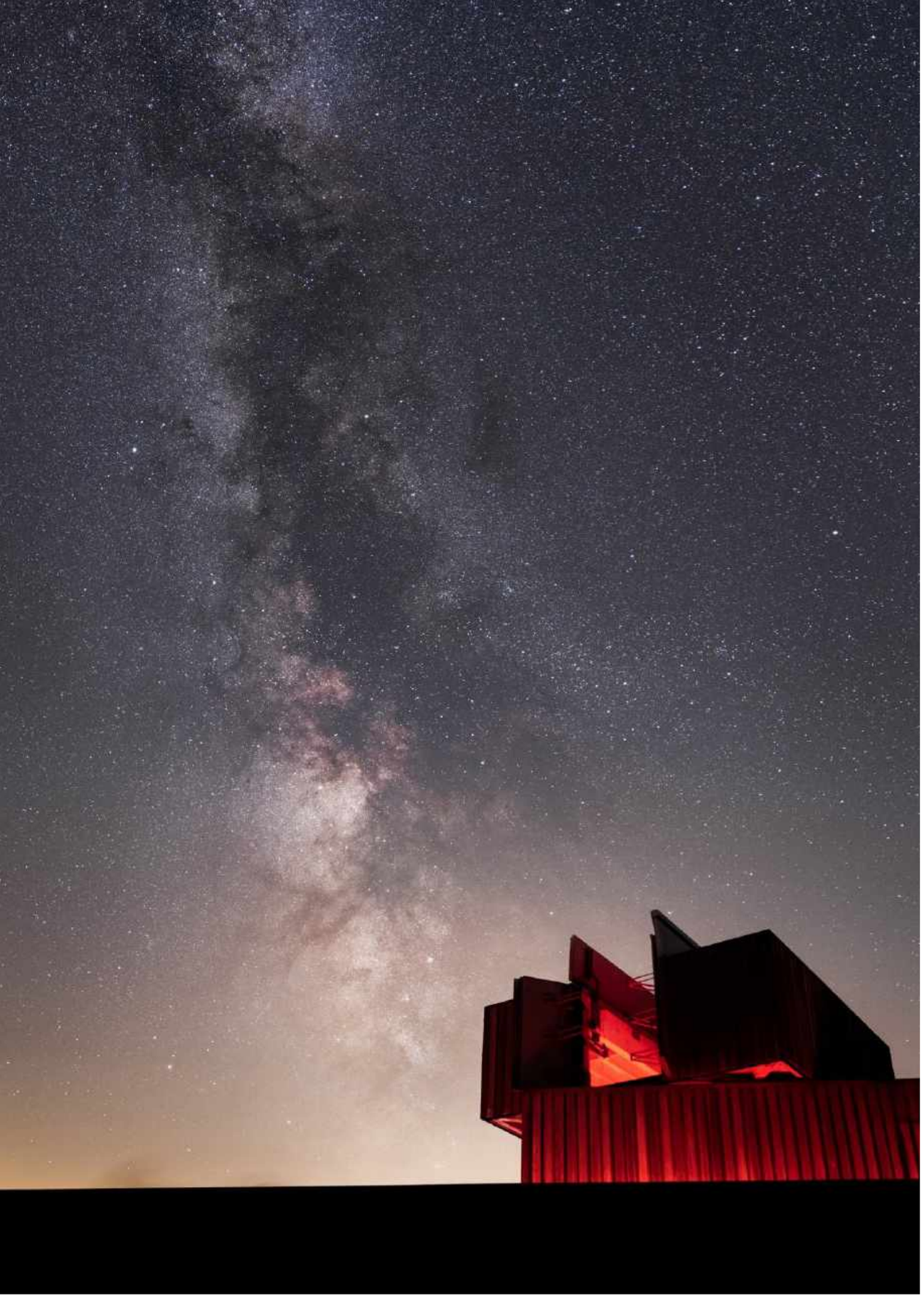
- We also have a 41 kilowatt solar array on the roof of Lanchester Wines' office complex, which is calculated to produce enough clean electricity to cover our day-to-day use. The chemical reactions which occur within solar panels are more efficient at cooler temperatures so County Durham's bright and sunny, yet rather chilly, weather is perfect for our solar panels.

- We are pioneering world-changing heat pump technology using water from disused mines at our warehouses in Gateshead. Working with organisations including The Coal Authority, Environment Agency and numerous academics, we are the first business in the UK to draw heat from disused coal mines – we have capability to draw over 110 litres of water a second. And, at 4MW, we have Europe's largest system of this kind. This will not only enable our customers to further reduce their carbon footprint, but also revolutionise how clean technology can be used in former mining areas across the world.

Our aspiration is to become a thought leader and sharer of best practice. As a privately owned, family business we are in a largely unique position which enable us to experiment and take risks in order to find new solutions, and we want others to emulate our successes – we believe what is good for the environment is good for us all.

"Because being carbon neutral is just the beginning"

Tony Cleary Managing Director



Kielder observatory

There's an eerie sound that you gradually become aware of when you visit Kielder Observatory – in such a remote, otherworldly place, where it's pitch black, except for our red lighting, you could be forgiven for momentarily letting your imagination run riot. The reality is slightly more mundane – it's the sound of our wind turbine which provides most of our power.

Kielder Observatory is one of three public access observatories in the UK sited in protected dark skies. It's one of the best places in the world to see the stars. The "Kielder moment" is special, when visitors look up at the glittering skies and realise that they are completely connected to this vast cosmos, yet utterly unique within it.

Sustainability is built into this ethos and is integral to our Kielder location. Kielder is all about people working together for the long-term care of the environment: we have the largest Gold Tier protected dark sky in Europe, the largest man-made lake in Northern Europe and the largest man-made forest in England.

The Observatory itself was commissioned to be off grid entirely. All water is brought on site in tanks by the staff, who have developed a highly efficient way of washing up mugs after our famous hot chocolate is served. Our loos are composting loos. If you've visited, you'll have heard the caution: "our loos are like black holes – anything that goes past the threshold, it's not coming back #keepyourphonesafe." Power is supplied by the wind turbine, some solar panels and, in extremis, a generator. Being off grid has its challenges. You have to talk nicely to the satellite dish to maintain internet connectivity. But this ruggedness, this half-wild remoteness, the landscape we sit in, and the stars that we can see: this is why Kielder is a place to reconnect with the natural world and our duty to care for it.

Catherine Johns CEO

Teesside University

Teesside University have been working with Quorn to drive the sustainability and quality of its protein.

The project based at Quorn's plant in Billingham will be led by Dr Nanda Ayu Puspita and will use ground-breaking new methods of proteomics, mass spectrometry and chromatography to identify and quantify proteins during the fermentation process as well using biochemical data to identify targets for new strains with desirable characteristics.

The project team will have direct access to Teesside University's £22.3 million National Horizons Centre, a UK centre of excellence for the biosciences based in Darlington.

Dr Gillian Taylor, Principal Lecturer and Operational Manager of the National Horizons Centre, will lead the academic team. She said: "Biosciences is a sector which has been forecast to grow considerably over the next few years, providing more jobs and investment in the region."

Dr Rob Johnson, Science Manager at Quorn Foods, said: "Quorn Foods is delighted to start this project with Teesside, which will provide evidence and technologies that will allow us to drive our products to new levels of sustainability and quality."

The University are also working with waste recycling experts Scott Bros. Ltd to assist in finding a practical solution for utilising their own particular brand of unwanted 'filter cake'.

30 percent of every 20-tonnes which pass through Scot Bros Ltd's wash plant process is fine-grained clay-based 'filter cake' material which can only be used as a pond lining clay or inert fill. They are working with experts from the University's School of Science, Engineering and Design to find a practical and commercial use for the filter cake, whilst making positive contributions towards the circular economy in Teesside.

The research is already producing 'encouraging results' in its quest to find a method of binding the material together to produce a commercial cementitious product. Possibilities include its use in the brick manufacturing process, floor screeds and potentially ground improvement.

Dr Ben Fisher Associate Dean for Enterprise and Business Engagement

Plastech & Durham University Business School

Established in 2018, Plastech Innovation Ltd is a spin out of Durham University.

Plastech Innovation provides a solution to reduce the volume of plastic waste entering our natural environment by reprocessing it into aggregate to be used in concrete and construction materials.

Plastech Innovation was founded by Natasha Boulding, Phil Buckley and Scott Bush, who all met at Durham University in September 2015 when they started their PhD studies as part of the Soft Matter and Functional Interfaces Centre for Doctoral Training (SOFI CDT).

The original concept for their business was established during a Design Thinking workshop, run by Durham University Business School, at which they were asked to come up with ideas to address the problem of marine plastics pollution. The summer school was designed to teach scientists about business and provided invaluable extra training which accelerated the business.

Plastech Innovation has developed a patent process to convert plastic waste into an aggregate for use in concrete and construction materials. This technology is a market-disruptor, enabling construction companies to partially replace sand in traditional building materials.

The addition of plastic into concrete produces a lighter-weight, thermally insulating and sound reducing material with some superior visual properties. This helps to solve two global challenges: diminishing natural aggregate resources and plastic pollution. The production of Plastech's aggregate uses 'hard to recycle' waste streams, which are often mixed and lower grade plastic. This new application diverts waste away from landfills and incineration. Moreover, plastic aggregate can lower the carbon footprint of concrete and has the potential to produce carbon negative materials.

The substitution of just 1% of construction-grade sand with plastic aggregate would eliminate global plastic pollution. This technology will provide solutions to some of the most threatening global challenges.

The Plastech team have won many national competitions and grants:
- Innovate UK Grant
- FSB Small Business Awards Environmental Area Finalist
- Northern Accelerator Proof of Concept Award
- Durham City Incubator Programme
- Durham Blueprint Startup Challenge, Ideas Challenge and Live Pitch Winners (2019)
- Shell LiveWIRE Winners (April 2019)
- Bright SCIdea Award Winners(2019)
- Thinking Digital Conference Finalists
- Project North East Sustainability Fund
- UK/China High-tech Projects Roadshow

Plastech and Sue Boyd Senior Business Development Manager (Research and Innovation Services, Durham University)

Newcastle University

As a result of restrictions of movement in the UK, closure of schools and businesses and requirements to work from home where possible, the UK is experiencing a period unlike any other.

This unprecedented situation out pressure on the UK's energy networks which are the backbone of the national energy system. Energy networks are usually operated based upon assumptions about the customer and organisational behaviours which have been analysed and modelled for decades. However, the current pandemic has changed these behaviours and the energy consumption pattern. Consequently, there is a huge need to have the capability to predict the patterns of energy demand during the pandemic period.

The change in the behaviours and the energy consumption pattern must also be studied deeply and interpreted in term of networks' resilience, overall carbon in the energy system and overall efficiency. Possible operational scenarios which can stress the energy networks such as the August 9th blackout can also be studied.

A Research team at Newcastle University led by Dr Sara Walker and Professor Phil Taylor is rolling out a research project to study the impact of the UK lockdown on the energy networks. The team includes researchers in energy networks analysis represented by Dr David Greenwood and Dr Adib Allahham, researchers in the field of data processing represented by Dr Mehdi Pazhoohesh and Dr Matthew Deakin and experts in data visualisation represented by Professor Philip James and Dr Luke Smith.

The research team is working in close collaboration with Northern Power Grid (NPG) and Northern Gas Networks (NGN). One of the project aims is to identify key trends in energy usage over the period January 2020 to July 2020, and deviation from historical trend data. The project will also work at developing predictive methods for energy usage within the period January 2020 to July 2020 and then evaluate these predictive methods over the latter period of lockdown.

The energy usage data will link up to the Urban Observatory COVID dashboard, to bring together all the data linked to energy usage to enable the team to gain an understanding of the impact of significant home working on network operation and share this understanding with the scientific community and interested stakeholders.

The impact of the predicated energy usage on the gas and electricity networks in the region of The North of Tyne Combined Authority will be studied. The resilience, the overall carbon emission and overall efficiency of these energy networks will also be analysed.

Primarily analysis results shown in Figures 1 and 2 depict that the GB gas and electricity demands have been dropped during the lockdown period. This will lead the project team to investigate the opportunities for long-term energy storage in a highly renewable electricity system.

Figure 1: GB Electricity Demand (7 day Moving Average)

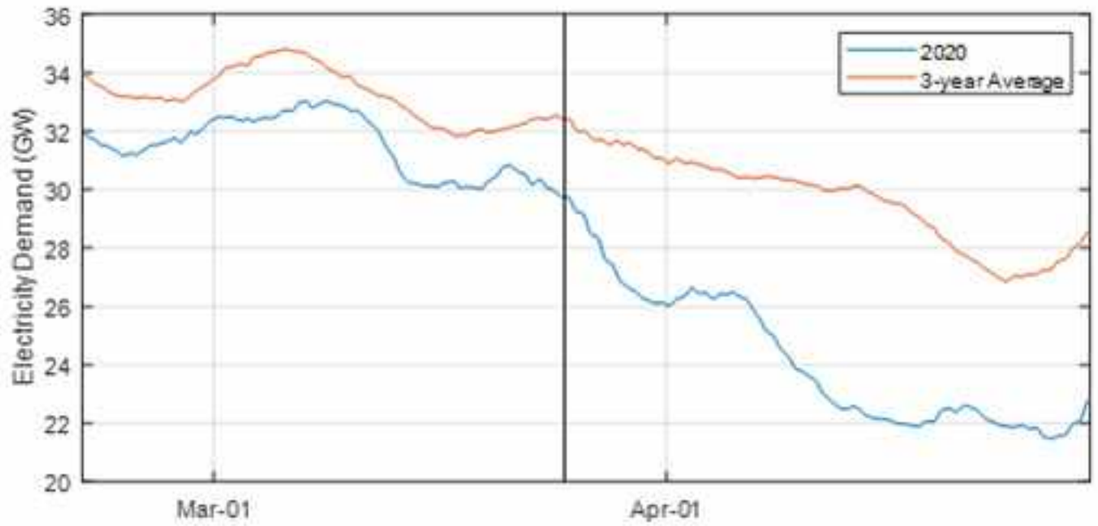
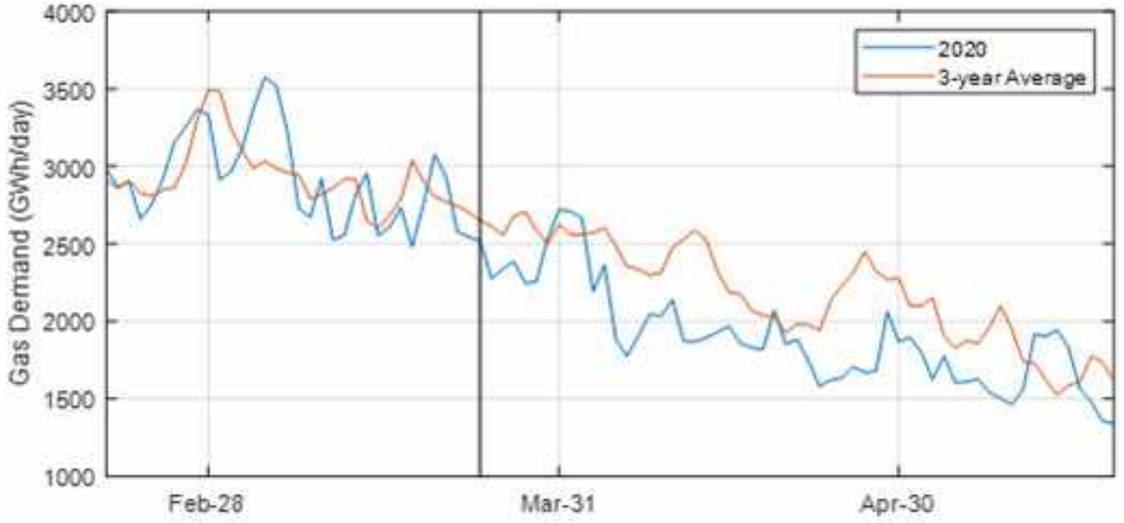
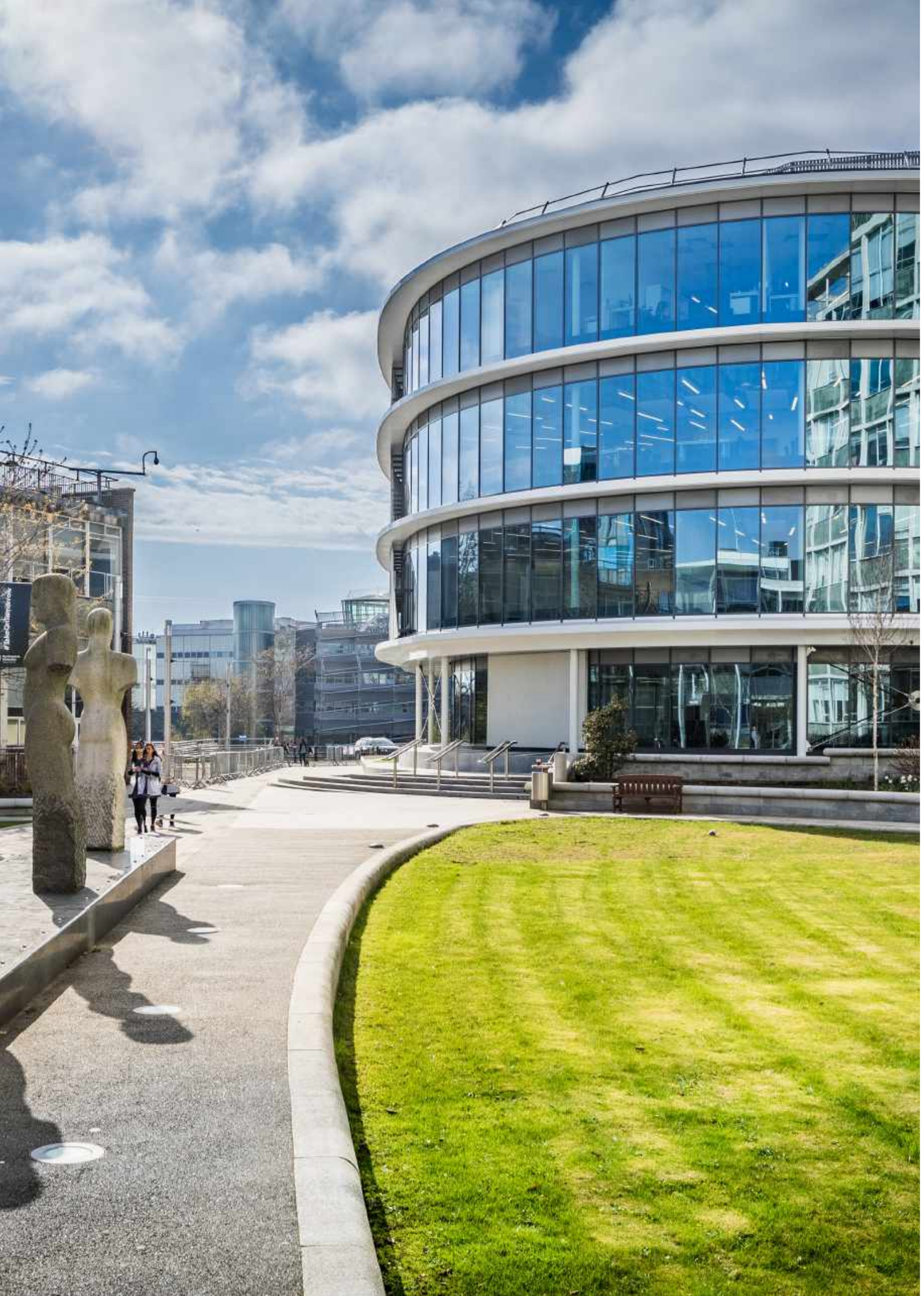


Figure 2: GB Gas Demand



Dr Sara Walker Reader in Energy
Professor Phil Taylor Professor of Energy Systems



Northumbria University

Northumbria University is internationally recognised for its performance and expertise in delivering sustainability: we reduced our carbon emissions by 50% in the past five years and are targeting zero carbon by 2040; our Environmental Management System gained the ISO14001:2015 international standard; and as a university we were ranked 4th in the UK (People & Planet) and 27th in the world (THE Impact League) for sustainability.

Our support for sustainability, however, extends beyond our own operations. Our Researchers are at the cutting edge of sustainability research and education - ranging from clean technologies and sustainable businesses models, to urban biodiversity and responsible design.

Northumbria University is further addressing the challenge of achieving net zero emissions through the recent launch of our Energy Futures programme. Recognising that this challenge is multi-dimensional and transcends disciplines, Energy Futures brings together energy expertise from across the University to benefit multiple external partners. This expertise includes energy materials, batteries, electric vehicles, heat and low carbon buildings as well as business models and policy.

Energy Futures leverages our position as project lead for the EPSRC Centre for Doctoral Training in Renewable Energy Northeast Universities (ReNU) which is a £5.4 million programme to train the next generation of innovators in renewable energy. ReNU has a portfolio of 27 companies including 12 SMEs, many of which are local businesses.

In addition to ReNU, Northumbria University is a founding partner (together with Newcastle and Durham Universities) of the EPSRC North East Centre for Energy Materials – one of six UK centres with funding from the Industrial Strategy Challenge Fund to drive Clean Growth. Through these initiatives we also work closely with the North East LEP and have recently co-founded the Energy Catalyst Board to drive economic growth stemming from low carbon opportunities. We also offer a range of CPD courses to develop essential sustainability skills. These include our ‘Climate Change and Business Resilience’ course, as well as accredited short courses in Environmental Management.

Katie Ridley Sustainability Adviser
Professor Neil Beattie Professor of Energy Innovation

Gateshead Council

The Gateshead District Energy Scheme is a 5km heat and power network which supplies low-carbon, low cost energy to homes, Council offices, and businesses across Gateshead Town Centre. Completed in early 2018, it is owned by Gateshead Council, and operated by Gateshead Energy Company, which is also wholly owned by the Council.

Whilst a publicly funded and controlled scheme, the Council and Gateshead Energy Company could not have delivered this national award-winning scheme to fruition without the support from a myriad of private companies. WSP ltd developed the scheme initially from concept to outline design and Northern Powergrid supported the scheme, by selling some of its assets to be used by the network, and its sister company, IUS, now maintain the 11kv power network.

Jim Gillon Energy Services Manager

Home Group

Home Group is a housing association, and one of the UK's largest providers of high quality housing and integrated housing, health and social care.

When we're building new homes and communities, for people to rent or buy, we're building them so they are fit for the future. We're responding to the government's future homes standard, which means installing only renewable heating systems from 2025, looking at the use of heat networks for decarbonisation and using modern methods of construction, such as offsite construction.

Recently, we built Gateshead Innovation Village - an exciting live research project which looks at new ways to solve the housing crisis. We are working with BRE and Northumbria University to extract the insight from the project, more of which will come in 2020. The project has created 41 homes - 16 volumetric houses and 19 modular houses, alongside six traditional houses. Different house types have been built using traditional, modular and modern methods of construction to robustly compare and contrast the performance of each building type.

The homes within the project are fitted with four different electric heating systems, in order to review things like the balance of install, servicing, customer running costs and impact towards switching from natural gas. Three of the systems have already met the Government's 2025 Future Homes Standard of 75% - 80% less CO2, with a fourth not far behind.

In addition to building new homes that are fit for the future, we are also working on our existing homes. With over 55,000 homes in hundreds of communities, we are focused on improving their energy efficiency. It's the right thing to do for the environment, and we hope it will also help to reduce the risk of fuel poverty for our customers. We're doing this in line with the government's fuel poverty strategy and we'll make sure that as many of our homes as possible achieve an EPC rating (a review of a property's energy efficiency) of C by 2030.

Nusheen Hussain Executive Director of Business Development

Greenology

Middlesbrough's Greenology has announced expansion plans which will see it deliver a full-scale de - polymerisation plant on Teesside over the next 12 months. The development has already started to bring 50 highly skilled engineers, designers and apprenticeships together, plus a whole local supply chain to an area that is working hard to build a green economy for the Tees Valley.

The company, based on Skippers Lane Industrial Estate, processes problem plastics into oil, bio-diesel and other valuable bi-products via cutting edge technology. The new plant will have the capacity to process 10,000 tonnes of waste per year, producing 3.75 million litres of bio diesel for use in commercial engines - the equivalent of enough energy to power 1000 homes.

New buildings, warehouses, offices and the green plant are planned on the two-acre site over the next 12 months, providing a solution to a product that is currently impossible to re-use and is instead landfilled and incinerated on an industrial scale.

Commenting on the announcement, company director Laura Hepburn said: "Greenology is leading the way globally in transforming problem products into energy. If we can continue on this track here in Teesside then we will put this part of the UK firmly on the map, as somewhere that is serious about our future, committed to tackle the issues around climate instability and passionate about harnessing a highly skilled, forward thinking workforce and technology that will help to power the world sustainably, reduce plastics and other waste streams devastating our planet and oceans. Our action needs to be now, not 2030 that is just too late!"

"It has been a challenging journey to get to this point, which has seen our factory flooded, victims of an arson attack and then functioning through the COVID-19 pandemic. However, these challenges have just pushed our whole team to achieve on a bigger scale than we had previously thought possible."

On 23rd June 2020 Laura herself was recognised by the prestigious Women's Engineering Society for her pioneering work, being named the UK's Top Engineer in Sustainability. The award reflects the input Laura has made so far into the design and installation modifications for the company's bespoke plant through reducing landfill, incineration and creating fuels that can be utilised in place of fossil fuels to power various mechanical and automotive processes.

Alongside Laura, the charity and professional association released the names of the 49 other top female engineers in the UK in 2020. Laura, who lives in Robin Hoods Bay, also featured in the Northern Power Women Future list 2020 earlier this year and has also been nominated for Entrepreneur of the Year 2020 by Ernst & Young and Nat West.

Laura Hepburn Company Director

Port of Tyne

Pursuing a green recovery from the disruption caused by Covid-19 is a business opportunity that's simply too good to be missed and the first seeds of economic growth in the local area - thanks to renewable energy - have already been sown. Port of Tyne will soon become home to the world's largest offshore wind farm.

A new era for the Port, this project will be transformational for the local South Shields economy, especially given that the government target is to ensure 60% home grown content in contracts for the provision of offshore wind projects. It means new local jobs, apprenticeships and new professional career pathways for young people. In the same way that Grimsby transformed itself during the Noughties - from beleaguered fishing town to become one of the UK's most successful hubs of renewable energy generation - South Shields and the surrounding areas are now tipped to now follow suit.

Locally in Tyneside, the new wind farm means an immediate 200 plus jobs plus the multiplier effect that its arrival will inevitably have, attracting more businesses into the area and increasing demand for local services. Using Grimsby as a case study, the arrival of wind farms resulted in over 5,000 new jobs and brought over £50 million into the local economy within a 25 mile radius. The same could be seen in Tyneside, where the Port of Tyne's activities already bring £621 million to the regional economy each year and could mean another 5,000 employment opportunities here within the next decade.

Continued business innovation is key to our vision at the Port of Tyne and we are also home to the first ever 2050 Maritime Innovation Hub, a fast-growing network of businesses and universities who explore how to apply emerging technologies to solve tomorrow's commercial challenges. Now running virtually due to Covid-19, we have been exploring new ways of working throughout the lockdown and holding various workshops and webinars exploring autonomous systems, AI, smart sensors, block-chain and big data analytics - to advance maritime innovation.

Simon Brett Commercial Director

Siemens Energy

There is a clear desire from business and the public to make the economic recovery from Covid-19 a green recovery, and with the commitment to reach net zero emissions by 2050, we believe Government should invest in tools which embrace a mix of technologies and energy sources to develop a flexible power mix.

Siemens Energy in the UK is a business of around £1.4bn, employing 3,500 people across the country, with main sites in Newcastle, Lincoln and Manchester. Our main areas of focus are power generation, power transmission, oil and gas and servicing as well as developing the clean technologies which will be used to power cities in the future.

Our gas turbines are setting new standards in efficiency while at the same time reducing CO2 emissions. Our new CCGT for SSE Thermal at Keadby in north Lincolnshire, will provide power for more than 840,000 people and is set to become the cleanest and most efficient gas-fired power station in Europe.

In addition, our high voltage direct current transmission technology enables power to be transmitted over vast distances with very little loss. And, we are market leaders in connecting offshore wind farms into the grid.

We are also looking at how the UK can meet net zero carbon goals with future fuels and technology innovation. Last year we powered part of the Goodwood Festival of Speed with an off-grid Hydrogen fuel cell. We have also developed a demonstrator to show how Green Ammonia could be used as a viable storage method for renewable power. We believe there can be additional job creation through new lower carbon energy generation technology.

There is no silver bullet to either the economic recovery or climate change, but to meet net zero targets we need to act quickly and scale projects – and with the right investment we can make the economic recovery a green recovery too.

Danielle Turton Head of Communications

Johnson Matthey

Johnson Matthey's vision is for a world that's cleaner and healthier, both today and for future generations.

In order to meet the global 2050 Net-Zero target, there is an urgent need to act. Around half of global greenhouse gas (GHG) emissions are produced by industry and in the provision of fuel for generation of heat and power. Hydrogen delivers energy without carbon dioxide emissions at the point of use and is expected to play a crucial role in the new era of clean energy.

Hydrogen can be used to supply many parts of the energy system, for example high temperature heat for industrial applications, rapid fuelling and range benefits for mobility, particularly heavy-duty vehicles and trains, as well as the potential for low-cost diurnal or seasonal energy storage.

Hydrogen is recognised as playing an important role in industrial transformation and delivering clean growth. Conversion of fossil resources to hydrogen with Carbon Capture, Utilisation and Storage (CCUS) is a practical means of bulk production, offering scale and cost benefits compared with alternatives such as electrolytic or bio-hydrogen.

However, the current leading technology to produce hydrogen is steam-methane reforming (SMR) that produces carbon dioxide as a by-product which is intensive and expensive to recover. Therefore, for methane-derived hydrogen to play a role in achieving Net-Zero, it requires technology that can be cost-effectively coupled with CCUS. Advanced Reforming, and specifically Johnson Matthey's LCH™ technology produces hydrogen at a higher efficiency than other reforming technologies and with a very high carbon capture rate, therefore delivering low-cost, low carbon bulk hydrogen.

The LCH process, developed at our Johnson Matthey facilities in Teesside, applies well-proven Johnson Matthey technology from other sectors to enable cost-effective deployment of large-scale efficient hydrogen production, capable of achieving greater than 95% carbon capture for storage. The process features award-winning Gas Heated Reforming (GHR) technology coupled with Auto-Thermal Reforming (ATR) and forms the cornerstone of several UK projects that seek to decarbonise regional industrial clusters.

One such project is HyNet, which was awarded £7.5m by the UK Government's Department for Business, Energy and Industrial Strategy (BEIS) to develop the UK's first Low Carbon Hydrogen Plant at Essar Oil Stanlow refinery in Ellesmere Port. The Johnson Matthey engineering team are currently working on the Front-End Engineering Design (FEED) to provide a reference design for the facility that can be replicated on future decarbonisation projects.

We are also working on the Acorn project, which is sited at St Fergus in Scotland, where a consortium including Total and Shell are investigating the opportunity to produce low carbon hydrogen at volume to blend into the gas grid with offshore sequestration of carbon dioxide in the Goldeneye field.

Mike Bainbridge R&D Director – Core Technologies

Banks Group

The Banks Group is a County Durham-headquartered renewable energy, property development and surface mining business that places environmental responsibility, sustainability and innovation at the heart of its operations.

The family-owned firm also has a long-standing policy of using locally-based suppliers across all its projects wherever possible to maximise the economic benefit they bring to surrounding communities, and directs tens of millions of pounds into the North East supply chain every year.

Banks Renewables is one of the leading developers in the UK's onshore wind sector, owning and operating ten wind farms across northern England and Scotland which have a total installed generating capacity of 224MW of clean green electricity.

Its wind farms displaced around 87,254 tonnes of carbon dioxide from the UK's electricity supply network in 2019, while the family-owned firm has ambitious plans for more renewable energy generation and storage developments in the region.

Mark Dowdall, environment and community director at the Banks Group, says: "Our longstanding 'development with care' approach has always placed environmental responsibility and sustainability at the centre of our developments.

"Our onshore wind farms not only generate substantial amounts of clean green electricity, but also tangible financial benefits for the communities in which they're based, while coal and fireclay is produced at our surface mines with considerably lower greenhouse gas emissions than foreign imports."

"We'll continue to invest in environmentally-sustainable best practice right across our business in the future and have a strong supply chain on our North East doorstep that will be able to help us take these plans forward."

Mark Dowdall Environment and Community Director

Avid Technology

AVID Technology is based in Cramlington, Northumberland. The company was established in 2005 by Ryan Maughan. AVID designs and manufactures components and systems for electric and hybrid heavy-duty and high-performance vehicles.

Ryan established the business in order to try and take positive action on the two huge and connected challenges of climate change and urban air quality and create a business with high quality engineering and professional career opportunities in Northumberland. In the early days of the business these challenges were not widely understood but have come to the forefront of public and government attention in the past 2 or 3 years.

AVID has worked with different vehicle manufacturers over the past 15 years to help them improve their vehicles and machines and understand how electrification could be used to improve their products efficiency and reduce emissions. This has ranged from electrifying cooling fans on buses and off highway machinery through to developing fully electric powertrains for supercars and luxury SUV's.

The company has built a world class team of highly skilled engineers, AVID's core technical competencies are high power density electric motors, high performance electronics and thermo fluidic integration. This allows the company to deliver highly integrated electrically driven components ranging from electric coolant pumps and fans to full electric drive systems.

AVID is well positioned to grow rapidly as manufacturers move electrified vehicles into higher volume production in response to market demand and government legislation.

Ryan Maughan Managing Director

Hitachi and Hyperdrive innovation

Hitachi Rail and Hyperdrive Innovation have signed an exclusive agreement to develop battery packs to power zero-emission trains and create a battery hub in the North East.

The two North East manufacturers will now accelerate the creation of batteries that can be mass-produced to provide emission-free power for hundreds of battery trains across the UK.

With almost two-thirds (58%) of the UK's 20,000 mile rail network not electrified and with the Government setting ambitious decarbonisation targets, Hitachi Rail analysis estimates the potential market for Hyperdrive and Hitachi's battery technology is over 400 trains.

This agreement is an important step towards manufacturing batteries at Hyperdrive's HYVE facility in Sunderland, and then installing them just 20 miles away at Hitachi Rail's train-building factory in Newton Aycliffe, County Durham.

Hitachi has identified its fleets of 275 trains as potential early recipients of the batteries for use in the UK, as well as installing them on new metro and intercity trains that will be needed in the coming years to replace ageing diesel fleets.

Battery trains produce no greenhouse gases, air pollution and are a far quieter, offering passengers cleaner air in stations, less noise disruption and a carbon-free way to travel. Installing batteries on to existing fleets can also extend their range and allow passengers to reach stations on non-electrified branch lines without having to change train.

A widespread adoption of battery train technology could be a major boost for industry in the UK, creating a market for Hyperdrive to increase its manufacturing capability up to 30,000 battery packs per year and double the number of jobs at its Sunderland factory.

Development of the UK's first independent battery pack manufacturing facility will drive costs down and for the first time offer domestic production of batteries for rail, automotive, construction and energy sectors. This will help to position the North East as hub for battery technology – supporting the Government's levelling-up agenda.

Andrew Barr, Group CEO, Hitachi Rail said: "Battery trains can play a vital role in improving the air we breathe, tackling climate change and providing modern, high performing rail service – all things we know passengers want to see.

"The partnership with Hyperdrive creates shovel-ready opportunity for new battery trains to be ordered now. As well as new trains, this is also a window of opportunity to cut carbon and supercharge a green recovery in the North East and across the UK."

Andrew Barr Group CEO, Hitachi Rail

Stagecoach

In 2013, a total investment of £8 million saw 40 gas buses introduced to Stagecoach's bus fleet in Sunderland.

Using biomethane gas as a sustainable source of fuel, the vehicles are part of the company's continuing investment in a cleaner, greener environment and its overall efforts to make buses a better choice. The gas buses serving Wearside are Scania/ADL Enviro 300 single-deckers and are fitted with free Wi-Fi.

Stagecoach North-East Managing Director, Steve Walker, said: "The buses are a testament to our green agenda as we continue to reduce our carbon footprint. The lower running costs of the gas bus fleet were also designed to pave the way for further investment in environmental improvements in future years."

Since 2016, £14m has been invested in 66 new buses for the company's two Newcastle depots, and a further £3m investment was made in 2019 on 18 Enviro 200 buses in Teesside. Recent research by KPMG shows that every £1 invested in local bus services generates up to £8 in wider social, economic and environmental benefits.

During 2020, Stagecoach also introduced its state-of-the-art on-demand bus service, Tees Flex, in partnership with the Tees Valley Mayor and Combined Authority,
Tees Flex aims to help residents in isolated communities across the region access essential services along with training and employment opportunities.

The fleet of nine Mercedes Sprinter buses, all of which feature disabled access, USB charging sockets and leather seats, have been deployed for use in three zones within Darlington, Stockton, Hartlepool, Redcar & Cleveland.

Passengers are able to pre-book the bus via the dedicated Tees Flex app or over the telephone. They can request pick-up and drop-off points within the serviced area, and to destinations including train and stations along with hospitals outside of the area.

The three-year pilot has the potential to be extended across the region if successful.

Steve Walker North-East Managing Director

Enterprise

At Enterprise, one of our main focuses as a family owned business is to operate with the next generation in mind. This deep sense of stewardship plays out in how we manage our company and the way our business operates within the surrounding environment.

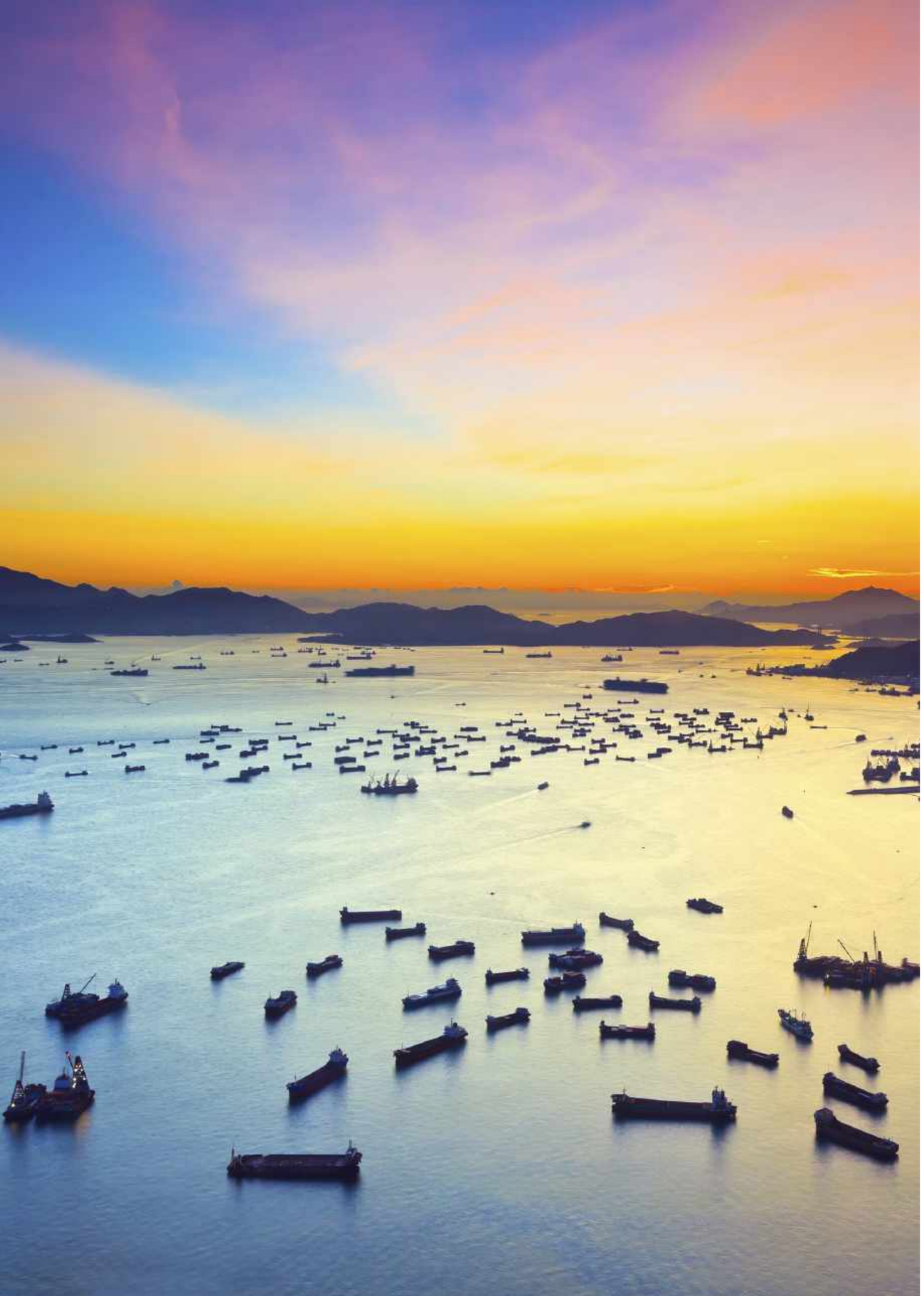
One of our solutions for sustainable travel is with Enterprise Car Club. Our Car Club provides fully a fully telematic, low emission, 24/7/365 access solution for transport users. The most recent expansion to our network in the North East is in Partnership with Cobalt Business Park. By locating several modern, low emissions vehicles in the business park, those working at Cobalt now have a sustainable transport solution.

Working with Lynn and the team at Cobalt, local journey profiles were analysed, identifying the need to provide a demand responsive business travel option. The provision of Enterprise Car Club for business journeys removes the need for users to bring their own vehicles to work. This then unlocks the potential for users to walk, cycle, journey share with a colleague or access local bus services for their commute.

In the current climate and in response to COVID-19 Enterprise Car Club supports the need to travel while adhering to social distancing guidelines. Enterprise Car Club ensures the integrity of its vehicles by committing to a 'Complete Clean Car Pledge'. Every vehicle is sanitized after every use giving users the confidence that they can travel safely and in comfort.

Many new members have been welcomed to our Enterprise Car Club, and we look forward to expanding our network to help with the effort to bring sustainable travel to the North East.

Laura Harrison Business Rental Sales Executive



North P&I

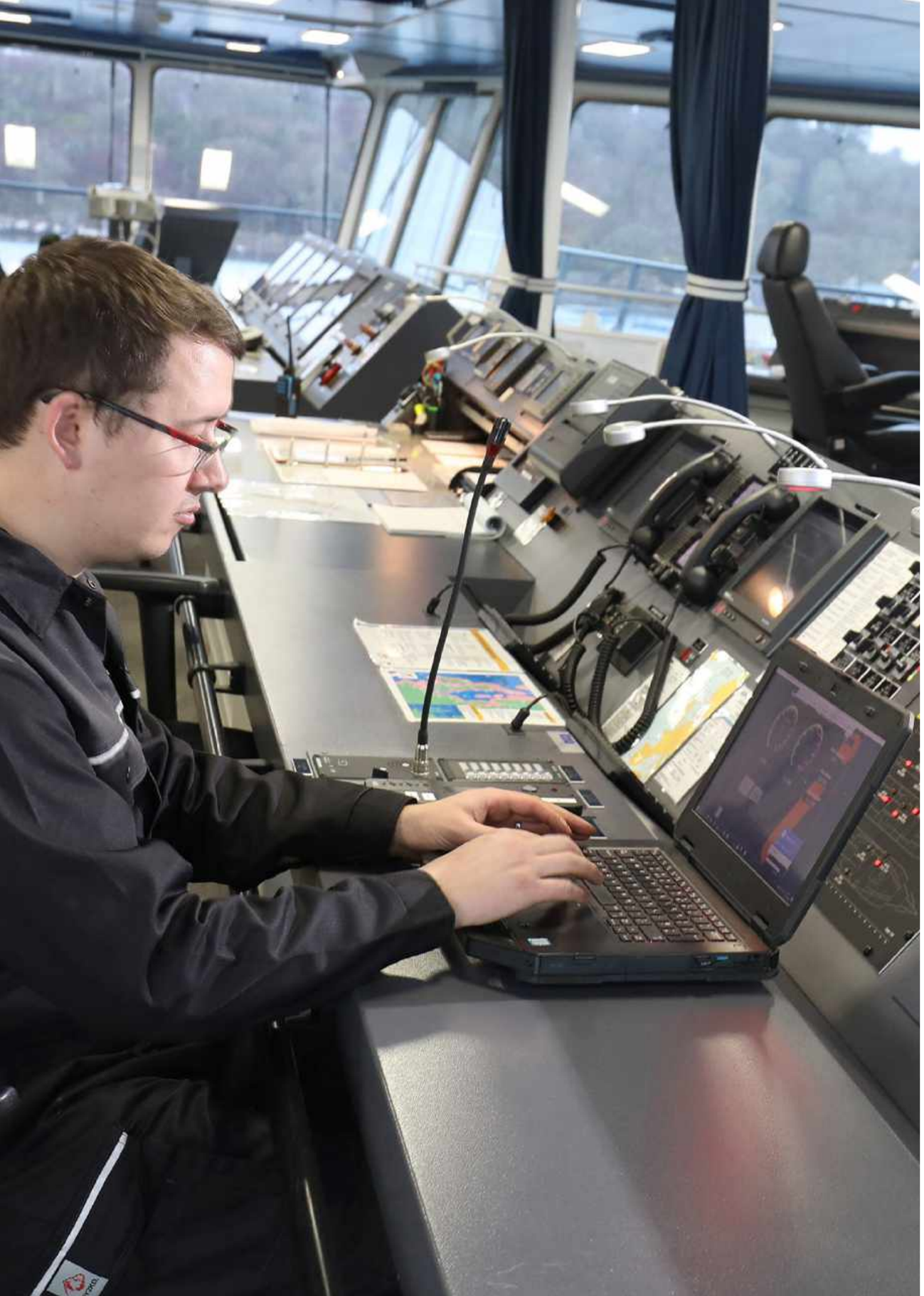
North P&I club is a leading global marine insurer. Our purpose today remains as it was on our inception in 1860; to enable our Members to trade with confidence. For a shipowner, this means not only North playing its part in minimising risks but also addressing the challenges which threaten global trade and development.

Climate change is of course one such threat. International shipping emits 2-3% of global greenhouse gas emissions, in transporting close to 80% of global trade by volume. The International Maritime Organisation has agreed on an ambition to reduce greenhouse gas emissions by at least 50 percent by 2050. North is proud to have partnered with the Global Maritime Forum (an international not for profit organisation) and is at the start of a journey to assist our members in their decarbonisation journey. The Global Maritime Forum provides a platform for leaders from the entire maritime spectrum to collaborate to effect positive long-term change for the industry and for society.

Earlier this year, the cap on the sulphur content of marine fuels to 0.5% came into effect, which will dramatically reduce sulphur dioxide emissions and have significant health and environmental benefits. Through our “2020 vision” outreach program, North was at the forefront of industry efforts to ensure shipowners and operators were ready and able to make the switch to low sulphur fuels.

The coronavirus pandemic has also emphasised the importance of putting societal as well as environmental concerns at the heart of a sustainable business. North recognises the potential impacts on seafarers’ health and wellbeing in these uncertain times and our Mind Call helpline is available 24 hours a day for seafarers feeling isolated or lonely. We have also been supporting the Sailors Society in their campaign to respond to seafarers needs during this pandemic.

Mark Church Director



Royston

Royston Power Generation (with bases in UK, Australia, Africa and Asia) has specialised in power projects for the global marine and offshore market for over 40 years. The company has over the last decade focussed upon innovating new energy efficient products working with the University of Newcastle; and has successfully commercialised enginei - which is a modular, solution-orientated fuel management product for the marine industry that incorporates a range of sophisticated tools, including an Electronic Fuel Monitoring System (EFMS).

The system provides valuable insight to both ship crew and onshore operational staff through reliable data and dynamic reports, which is recorded and visually represented on a touchscreen bridge display and online dashboard. Continuous innovation has meant enginei also offers a number of additional features, including performance optimisation, compliance and reporting, energy management, and emissions monitoring. The product has been taken up by over 200 shipping companies and offshore operators worldwide; and has been specified by international oil industry leaders.

One of the enginei customers operates in some of Europe's least polluted waters and was committed to improving its maritime environment. The aim was to accurately monitor and report on the fuel consumed by each of a vessel's engines while in service in order to establish and implement the most efficient operating parameters for individual ships. Data output for each vessel was supplied to the company's HQ, so that a complete analysis of vessel performance could be maintained in relation to weather, tidal and loading conditions, speed across the water and sea state.

The aim was to achieve a minimum 5% reduction in greenhouse gas emissions and fuel expenditure. Conservative indications from the client indicate that the actual performance exceeded this and made a significant improvement to its carbon footprint.

Shervin Younessi Technical Manager

Innovation SuperNetwork™

NORTH EAST ENGLAND

Innovation SuperNetwork

The Innovation SuperNetwork, whose work focuses on creating opportunity for collaboration through open innovation and access to finance, has launched a business accelerator in response to the potential impact of Coronavirus on the Climate Emergency.

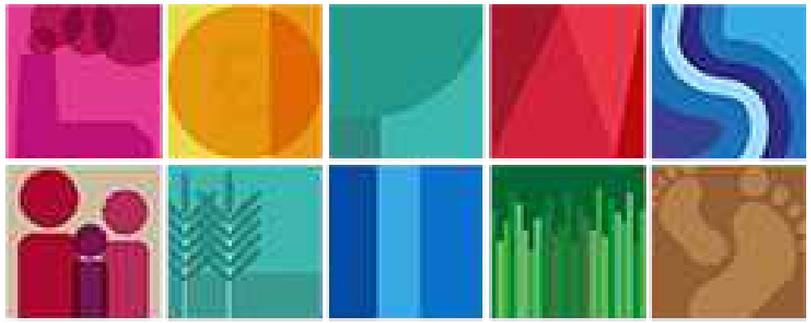
While the public response to the Coronavirus crisis has over the last few months led to a drop in harmful emissions, there is a risk of an overall increase in carbon emissions, which would negatively impact the region's efforts in tackling the climate emergency.

For instance, as those who can't work from home return to the workplace, a reluctance to use public transport or car share could see an increase in commuter traffic on the road. More home deliveries could also see more traffic contributing harmful emissions and congestion in residential areas. Likewise, a resultant economic downturn could leave businesses and individuals in a financial bind where they're less able to invest in energy saving measures and equipment.

The SuperNetwork has launched a Climate Change Innovation Accelerator to encourage an innovative response to these potential issues. It seeks to bring solutions to market that will support the region's commitment to tackling the long-lasting damage of climate change to people, communities and the economy against the backdrop of COVID-19.

The accelerator is now working with 15 North East businesses on launching of new products and services in response to these issues. They are focussing on sustainable safe public transport, electric vehicles, home deliveries and sustainable home working. Each business is receiving one-to-one support, including help developing product and business plans, raising finance, marketing, financial management and legal advice.

Simon Green CEO



CAPABILITY NORTH EAST

Capability North East

Capability North East provides a range of environmental consultancy services to support the implementation of environmental strategies and plans to reduce environmental impact.

We work with public and private sector organisations of all sizes with local councils, hospital trusts and SME's as clients. Our team's whole system approach has been applied to variety of projects examples include carbon footprinting, greening procurement, shrinking digital footprints, linking green performance indicators to strategic commitments and stakeholder engagement.

Our preferred environmental management system is Investors in the Environment (iiE), a national system with 3 accreditation levels (Bronze, silver and green) and is adaptable to businesses of different sizes and sectors. iiE is a user-friendly system to guide businesses and organisations through their green journey with a focus on implementation, results and making a difference.

Increasing biodiversity or helping nature is something more businesses are keen to do. Our site-specific Biodiversity Action Plans help to enhance green space, developing wildflower areas and native species planting policies.

The benefits to our clients of improving their green credentials are many including; financial savings, adding positively to their story and communications, doing the right thing, better staff engagement, improved processes and accessing new customers by being able to give meaningful answers to environmental questions in tender and commissioning documents. We are currently developing our social impact reporting system and setting up the Capability Environment Fund to give a percentage of our profits to support environmental projects that connect people and nature.

Claire Thompson Exec-Sustainability & Natural Capital

Samuel Knight International

Samuel Knight International provides global manpower and project solutions for the full renewable energy portfolio – offshore & onshore wind, solar PV, hydropower, and biomass systems.

Founded in 2014, in Newcastle upon Tyne, Samuel Knight International has enjoyed exponential growth, and now boasts three UK offices and two USA office locations to support growth, client development, and global project requirements.

We bring renewable energy skills and expertise to our clients, by accessing the very best renewable energy talent, within the region and beyond.

Serving the renewables market, we specialise in global manpower, our specialist energy team works exclusively within the industry.

With a comprehensive understanding of the renewable energy market, we work across the full supply chain to support manpower delivery, enabling the seamless installation and completion of green energy projects around the world.

Our award-winning team of consultants approach every project with professional integrity, diligence, transparency and an understanding of the unique requirements of renewable energy assignments.

Our presence in the North East means we are perfectly placed to build close working relationships within the regions' renewable energy market. We're initialising plans to commence our service proposition for the region's biggest renewable energy project, Port of Tyne's Dogger Bank. Samuel Knight International will be tendering to service and provide manpower solutions for the Dogger Bank Wind Farm and Sofia Offshore Wind Farms.

With a global portfolio of renewable energy projects, we are well equipped and expertly placed to support regional activity.

Craig Charlton Business Development Director for Renewable Energy

Compliant FM

Compliant FM deliver integrated management into many local and national businesses. The ISO 14001 standard has proven success across a range of areas, including reduced energy and water consumption, a more systematic approach to legal compliance and an improved overall environmental performance.

Major Benefits of ISO 14001 to our clients include cost savings in waste, a reduction in their carbon footprint and an advantage over competitors when tendering for business.

We support our customers by demonstrating compliance with current and future statutory and regulatory requirements. It enables the companies to encourage better environmental performance of suppliers by integrating them into the organization's business systems and achieve strategic business aims by incorporating environmental issues into business management.

Mark Henderson Tech IOSH, Tech IFSM, MIWFM, Director

HQBS

North East company HQBS is busier than ever and expanding fast! The supplier of low carbon, cost-efficient energy solutions for businesses takes a customer-driven approach to finding the perfect full package energy solution for each business they work with. From getting to know the customer and their goals, to proposals, financing options, installation, and aftercare, HQBS works hard to provide seamless service every step of the way. As the UK sets its sights on a renewable-energy led recovery from the pandemic, businesses are looking for opportunities to save money while improving their sustainability. HQBS is ready and able to help.

HQBS sell, lease, install, and maintain Combined Heat and Power (CHP) systems. These systems run on natural gas, LPG, or biogas, to generate both heat and electricity in a single process. This method of power generation can offer energy savings of up to 40%. It's a more environmentally-friendly and sustainable alternative to traditional energy sources and offers customers control over their power supply; essential for business continuity.

With customers across the UK, HQBS has an increasing number of local clients, including the Abodus Portland Green Student Village in Newcastle and Stockton Council's exciting new leisure facility in Ingleby Barwick. Recently, HQBS was approached by the Holiday Inn at Stannington in Morpeth. The hotel was looking to decrease its carbon footprint, whilst reducing energy costs. HQBS worked closely with the Holiday Inn to offer and implement the optimal solution to meet the hotel's requirements and goals. HQBS installed an Indop 140 CHP which will produce 99% of the building's electrical requirements, saving the Holiday Inn approximately 429,741 tons of CO2 and £60,000 per year in energy costs alone.

Managing Director Fred Hall, who started the company in 2016, says "We can help businesses face the uncertain economic climate post-COVID by offering them a product that meets their energy needs and results in real savings on the bottom-line. We're bringing on new people to make sure we can continue to offer the personal, bespoke service we pride ourselves on delivering."

Denise Farrar Director

One Awards

Due to the unprecedented changes in working arrangements that COVID19 brought upon us, the team at One Awards have decided to move towards a more permanent home working norm for the staff who would usually be based out of the office in Peterlee.

What could have taken 18 months to plan and implement, was thrust upon us in 48 hours and the team have quickly learned how to work effectively using new technology and systems to reduce travel, improve work life balance and support more environmentally/green initiatives.

Our customers are the region's colleges, training providers and employers who use our accreditation service, qualifications and apprenticeships and so by booking a work space/ meeting room within our customers' premises, we shall be accessible, visible and on site to deal with any queries and new development ideas. Collaborating in this way will achieve great efficiencies for all parties and we are excited to get started on this smarter working model.

Fabienne Bailey Managing Director

ONE Awards

PART OF nocn GROUP

Groundworks

Groundwork's mission is to inspire people and deliver positive sustainable change in places of need. To achieve our aim we work with proactive public services, corporate or statutory bodies such as local authority or government, community leaders, external businesses, funders and not-for-profit/voluntary bodies.

Groundwork's national Landscape Architecture service is 25 years established in environmental enhancement and landscape improvement, and is underpinned by leading sustainable design practices, including climate-proofing design such as sustainable drainage systems.

Our expert architects develop urban air quality improvement projects & cycle ways, major flood alleviation schemes & innovative Blue Green Infrastructure projects such as river restoration, woodland management, accessible wetlands; alongside initiating major land management partnerships. Our Chartered architects operate within multidisciplinary teams from the public & private sectors, translating our depth of technical & design knowledge into inclusive landscapes designed in harmony with the environment, to improve local green infrastructure; making a real difference to people's lives & biodiversity.

Green Doctor Energy Advice Service has been delivered in the North of England for the past 11 years, providing fuel poor homes with advice & basic energy efficiency measures. We support people with a range of energy related solutions to save them on average £350 annually on bills; including tariff switching, help with energy suppliers including billing, debt & meter connection, emergency broken heating/hot water/gas appliances repairs, water support and debt advice if the client is in wider financial trouble, including access to grants.

Kate Culverhouse Chief Executive

J. Denham Metals

J. Denham Metals continued to export scrap metals produced by the North-East engineering and manufacturing companies to steelworks around the world.

The recycling company was founded more than 50 years and has grown rapidly in recent years, having opened a second site in Wingate in East Durham. Plans for further investment and growth remain in place despite the effect of Brexit and most recently the Coronavirus (COVID-19) pandemic.

The company previously revealed it had increased capacity and now load over 200 containers of metals every week and that it would continue to cultivate its existing bulk export market from the regions logistics hubs.

The recycling ethos of the region's manufacturing and engineering sector is encouraging, and we have found that if a balance between rates paid for materials, prompt payment, quality of service and improvements to a company's green credentials are achieved people are happy to support our vision of regional companies working together.

Chris Trotter Business Development Manager

DRD Power Ltd

DRD Power Ltd has developed an innovative and cost effective technology that converts waste heat from manufacturing processes into carbon free electricity to help achieve decarbonisation and reduce operating costs. A 132kW generator has been designed and installed at Huntsman Tioxide Pigments at Hartlepool. The electric power generation unit utilises the low temperature process waste heat at 90°C and converts this directly into carbon free electricity. The unit reduces CO2 emissions by 400 tonnes/year and generates electricity worth £80,000/year.

DRD Power won a Shell Springboard award for this carbon reducing technology. The design of the unit is based on modern refrigeration technology and does not use any flammable or toxic substances. The modular power generation units are available in a range of sizes from 10kW – 200kW.

The technology can be applied to a wide range of process sectors including chemicals, refineries, distilleries, iron & steel, power generation, CHP engines, landfill site gas engines, anaerobic digestion plants, cement, glass & ceramics, waste to energy plants, hazardous waste incinerators, thermal oxidisers, crematoria, etc.

In the case where electric power generation is combined with biomass boilers used for process heating and in hotels, sports centres, spas, horticulture/garden centres, these usually qualify for the highly lucrative CHP–RHI (Combined Heat & Power – Renewable Heat Incentive) payments which are index linked and payable for 20 years.

Roger Mallinson Director

Wear Rivers Trust

The Wear Rivers Trust, WRT, established in 2010, operates across the whole of the Wear Catchment, its tributaries and coastal waters, in urban and rural communities from above the river's source at Wearhead to the sea at Sunderland, including the coastal denes.

The Trust operates locally, but as a member of the UK-wide Rivers Trust movement, has a national voice. WRT hosts the Wear Catchment Partnership which draws together organisations working together to protect and enhance the health of the catchment: community organisations, environmental groups, DEFRA agencies, local government, water industry, academia and agriculture.

In addressing global environmental challenges at a local scale WRT is working to promote environmentally aware commercially sustainable business practice through accreditation to Investors in the Environment, helping businesses reduce environmental footprints whilst reducing both costs and business risk from inadvertent pollution.

Through our Corporate Partnership Programme we can assist in the adoption and enhancement of Environment & Corporate Social Responsibility policies, evidencing ethical business culture with positive societal impact. We provide active river improvement team building days where colleagues can have fun learning how river catchments work whilst making a practical contribution to the environment. Volunteering is generally accepted as a key driver in delivering and personal health and wellbeing, contributing to real environmental improvement.

Kirstie Hutchinson Office and Business Development Manager

Further information for businesses

Information on Groundworks Green Doctor service around energy efficiency
https://www.groundwork.org.uk/services/green-doctor/

Information for County Durham's Business Energy Efficiency Project to support SMEs
https://www.beep.uk.net/what-is-beep/

Information on how Capability North East can help businesses become more sustainable
https://capabilityne.org.uk/

Information about the investors in the environment network
https://www.iie.uk.com/

Information from Northumbria University on their full range of sustainability expertise and opportunities for partnerships
www.northumbria.ac.uk/sustainability

Information from Johnson Matthey around hydrogen and a source of energy
https://matthey.com/en/markets/energy-generation-and-storage/hydrogen

Workplace case studies from the TUC around environmental initiatives in workplaces
https://www.unionlearn.org.uk/green-skills-partnership

A report from the TUC on a just transition to a greener economy
https://www.tuc.org.uk/sites/default/files/A_Just_Transition_To_A_Greener_Fairer_Economy.pdf

Information from Cenex on low emission transport
https://www.cenex.co.uk/

Information from zero carbon future on electric vehicle projects
https://www.zerocarbonfutures.co.uk/

Information from the North East Automotive Alliance on electrification technologies
https://www.northeastautomotivealliance.com/about-neaa/working-groups/electrified-powertrain-technology/

Information on the Gateshead District Energy Scheme
https://youtu.be/8A9-ayVYI04 and https://youtu.be/tBwwBNXQ7m

Information on DRD Power's green technology trial
http://drdpower.co.uk/necc-innovation-report-launch/ and https://www.thenorthernecho.co.uk/business/8628192.green-scheme-trial-region/

Information from Compliant FM on certification https://www.compliantfm.com/

Information from Enterprise on their car share scheme
https://www.enterprisecarclub.co.uk/gb/en/programs/promotion/support-worker-discounts.html

Information from HQBS on making your business more sustainable
https://hqbsenergy.com/8-ways-to-make-your-business-sustainable/

Government guidance on combined heat and power systems
https://www.gov.uk/guidance/combined-heat-and-power