

## High Potential Opportunity

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# Controlled Environment Agriculture

Establish your business at the heart of an innovative Controlled Environment Agriculture cluster and benefit from collaboration, research and innovation expertise that spans smart technologies to manage and monitor every aspect of the growing environment through to vertical farming.

North & West Yorkshire



Department for  
International Trade

Photo credit; P3P Partners.



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# Controlled Environment Agriculture in North & West Yorkshire

Controlled Environment Agriculture (CEA) is where parameters, such as light, temperature, relative humidity and sometimes the partial gas pressure (and possibly its composition), are fully controlled. This includes smart technologies for monitoring and remote management of glasshouses right through to vertical farming, where fresh produce is grown in stacked layers under LED lighting.

Join our growing Agri-Tech cluster and your business will benefit from access to the talent, skills and research excellence you need to be successful, in a cost competitive location.

**IT'S YOURS TO BUILD.**



# 1

## Executive Summary

Profit from the growing national and global demand for fresh, local produce.

## Transform the agricultural sector with controlled environment applications for innovative farming techniques and circular economy solutions

By locating in North & West Yorkshire, your business will be able to exploit an array of agri-food assets, capabilities and most importantly a growing and sustained market for your products.

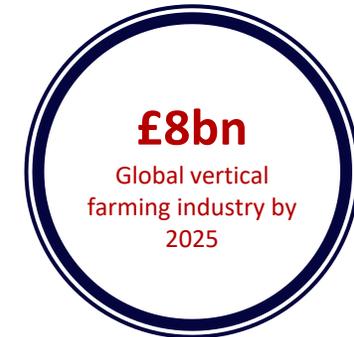
There is strong market demand here, owing to the UK's high population density, high GDP per capita and a significant segment of consumers who will pay a premium for added-value fresh foods. Overall the UK is only 61% self sufficient in food, importing £14 bn worth of fresh food every year. The fruit and vegetable wholesale market, for example, is worth £10.2 bn with imports making up over 80% in fruit and over 50% in vegetables, giving a clear market opportunity for locally grown produce by using controlled environment agriculture.

Controlled Environment Agriculture aims to create the optimum growing conditions, allowing year-round cropping of a wide range of high value, fresh produce closer to the point of consumption. Such techniques include vertical farming, aquaponics, aeroponics and hydroponics. Other opportunities also lie in insect rearing for protein usage potentially reducing the environmental impact of other proteins in animal feed and in the bio economy.

North & West Yorkshire is a location ideally positioned to meet this demand, with an established food production cluster sitting alongside a growing circular economy capability.



Design and develop controlled environment agriculture and bio economy solutions for a growing sector



Take advantage of this transformational opportunity and provide solutions in:

- ▲ **Controlled Environment Agriculture - Plants**
- ▲ **Controlled Environment Agriculture - Insects**
- ▲ **Innovative Farming Techniques**
- ▲ **Bio economy**



# 1

## Executive Summary

Benefit from a presence in North & West Yorkshire, a location primed for your investment.

### Invest in a location at the heart of the UK's food chain

North & West Yorkshire has a growing agri-tech industry which is leading to a concentration of projects, startups and technology companies unrivalled in Europe, making it an ideal location for your investment.

**Integrate with a rapidly growing research and innovation intensive cluster:** with key facilities including the Innovate UK funded Agri-Tech centres Crop Health and Protection (CHAP) and the Centre for Innovation Excellence In Livestock (CIEL), as well as Stockbridge Technology Centre, FeraScience Ltd, the Centre for Novel Agricultural Products and the Biorenewables Development Centre.

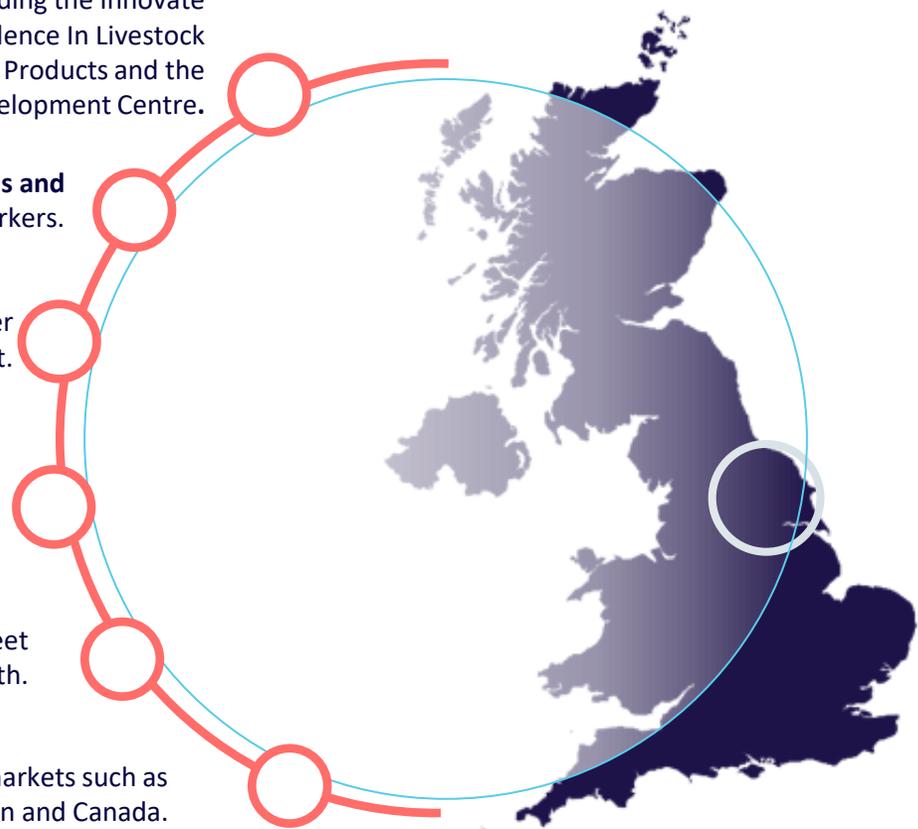
**Collaborate with 2 of the largest food retailers in the UK, headquartered in Leeds and Bradford:** and over 700 food production companies, 13,000 farms and 25,000 workers.

**Benefit from some of the lowest cost industrial space in the UK:** approx. £5.50 - £6.50 per sq ft versus a UK average of £8.70 per sq ft.

**Capitalise on a wide choice of soft landing platforms:** enabling you to set up-in dedicated collaborative space for you, industry and academia.

**Gain direct access to a core of highly-skilled agri-tech related students and professionals:** to meet your needs now and support your business growth.

**Exploit competitive salary costs:** lower than other key markets such as the Netherlands, Spain and Canada.





# 2

## The opportunity

Exploit the growing demand for local, sustainable and freshly grown fruit and vegetables.

Controlled Environment Agriculture - Plants

Controlled Environment Agriculture - Insects

Innovative Farming Technology

Bio Economy

## Use Controlled Environment Agriculture (CEA) to dramatically improve yields and deliver fresh produce to the doorstep of consumers

North & West Yorkshire is one of the leading centres for controlled environment agriculture in the UK, with an unrivalled cluster of producers, partners, suppliers and customers.

**The global vertical farming industry is worth £1.5bn today and is predicted to grow to £8 billion by 2025**

Vertical farming – sometimes called indoor farming – is the practice of growing plants under fully controlled conditions in buildings in many stacked layers, without natural light. Unlike glasshouse production, which relies on sunlight, it makes use of LED lighting to provide different wavelengths of light, according to crop and growth stage need.

**Use Hydroponics, Aeroponics and Aquaponics to grow your fresh locally produced foods**

- › Hydroponics is a system where plants are grown in the absence of soil by using a nutrient solution. Roots may be suspended within the solution or supported by pebbles, sand or other materials.
- › Aeroponics plants are still grown in the absence of soil by using a nutrient solution delivered as a fine mist.
- › Aquaponics is a form of hydroponics where nutrients are provided through the waste products of aquatic organisms.

**Collaborate with key innovation partners to boost productivity**

N8 AgriFood combine expertise and multiple disciplines from the 8 research intensive universities in the North of England. The N8 are currently undertaking a number of cutting-edge research projects in CEA, to explore areas such as novel growth media, novel lighting and crop phenotyping, photobiology, low-cost sensing and control, approaches to breeding and life cycle analysis.

[www.n8agrifood.ac.uk](http://www.n8agrifood.ac.uk)





# Insect protein has huge potential for the UK – with deep regional expertise in North & West Yorkshire to drive modernisation and innovations in the field of insect farming.

North & West Yorkshire is one of the leading centres for insect farming in the UK, with an unrivalled cluster of producers, partners, researchers, suppliers and customers.

## A protein ‘gap’ exists today and is growing

Demand gap for high quality protein for animal feed is projected to be 350m tons per annum (tpa) by 2050 (100m+ by 2025). Insects can easily be farmed where the demand is, eliminating shipping costs (significant driver in the cost of conventional animal feed). Fera Science led studies show that insect based protein is better quality (natural, easily digestible, the right types of amino acids, increased farming yield).

## The global black soldier fly market will grow from £105 million to reach £1.88 billion by 2030

One square meter of black soldier fly larvae can eat approximately 15 kgs of organic waste a day, and dense populations of larvae can convert large volumes of organic waste into valuable biomass (van Huis et al., 2013). For instance, larvae can reduce the accumulation of manure from laying hens and pigs by 50% or more without extra facilities or added energy (Sheppard et al., 1994; Newton et al., 2005; Barry, 2004). Insects have the ability to convert agricultural waste (£37 - 43 per ton) into high quality protein (£p.1025 per ton) and reproduce at a quasi exponential rate.

## Economy

At present, commercial insect breeding and rearing takes place in the UK on a small scale for food, animal feed and technical purposes. The UK however recognises the potential of the sector and aims to support the growth of the industry recognising that production across the EU is steadily increasing with industrial operations emerging and consumer demand on the rise. There are strong commercial opportunities for the same in the UK. North & West Yorkshire is well placed regionally to aid the development of the UK sector.

## entrepreneurs, researchers, and innovation leaders to leap ahead

The region has key experts able to support investors and businesses in the development of insect farming – in entomology, quality management systems, pre-treatment solutions, industrial scale trials, novel biotechnological processes, automation and robotics, feed operations, and insect product development. This expertise is available from Fera Science Ltd, University of York, York Biorenewables Development Centre, Leeds University, and innovators and research teams in Food By Insects Technology, and the research team in Insbio.

Controlled Environment Agriculture - Plants

Controlled Environment Agriculture - Insects

Innovative Farming Technology

Bio Economy



Original thinking... applied



UNIVERSITY OF LEEDS

## Insects will play a key part in the Circular



Sources: Interreg, Black-Soldier-Fly-Market-Worth-2-57-Billion-by-2030-Exclusive-Report-by-Meticulous-Research. Fera Sciecnie Ltd, 2021. Pictured; Yellow meal worm and black soldier fly.



Take advantage of the opportunity to develop and apply new technologies to strengthen controlled environment agriculture systems.

**Breed plants specifically for Controlled Environment Agriculture**

Crops currently grown using CEA were originally bred for either outdoor or glasshouse environments. To fully take advantage of CEA, new crops will need to be developed. These new crops will produce greater yields and require less land for the same output

**Exploit LED lighting, sensing and machine learning to boost agricultural yields**

As higher resolution sensors and spectral imaging become affordable, it is now possible to monitor crops at the individual level. This with tuneable LED lighting and environmental control, paves the way not only for more advanced growth recipes, but also for

real-time, targeted and autonomous adaptation within growth conditions based on big data and machine learning.

**Use robotics and autonomous systems to expand CEA production**

Robotics has the ability to transform low productivity activities within the agricultural sector, including CEA. Back-end automation already exists within the agri-food supply chain, mainly focused on inputs, delivery and logistics. Further automation will focus both upon novel robotics for planting and harvesting, and upon integrating discrete technologies for e.g. navigation, manipulation, and perception.

**A clear market of scale**

**£5.45bn**

Global market in plant breeding

**£2.6bn**

Global market in LED lighting for industrial processes

**£3.3bn**

Global market in agricultural robots

- Controlled Environment Agriculture - Plants
- Controlled Environment Agriculture - Insects
- Innovative Farming Technology
- Bio Economy

Sources: Markets and Markets, Plant Breeding and CRISPR Plants Market, Dec 2018. Frost & Sullivan, 2020 Annual Update of Global LED Lighting Market, Sep 2020. Markets & Markets, Agricultural Robots Market, Aug 2020.



# Bio Economy - Collaborate with industry, academia, and leverage world-class research to drive down energy costs in agriculture

The region has significant strengths in the circular economy, including the assets of Drax Power Station, the largest biomass power plant in the world.

## Profit from anaerobic digestion (AD), delivering benefits of a rural economy, food security and environmental protection

AD can transform farm material, including slurries, crops, chicken litter, vegetable off-cuts, outgrade crops or animal by-products into a new income stream for the farm. For a farm integrating on-farm AD plants into its business, around third of the farm income may come from exporting energy.

## Utilise world-leading research to drive your product innovation

The **BioRenewables Development Centre (BDC)** is an open-access R&D centre working at the interface between academia and industry to develop, scale-up and help commercialise bio-based products and processes. The centre offers a unique combination of multi-disciplinary expertise coupled with pilot-scale processing capabilities in one coordinated centre.

## Expanding Insect Bioconversion

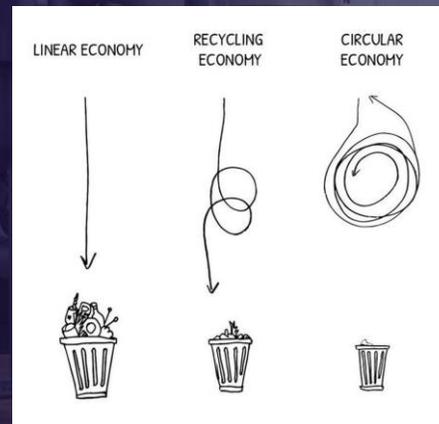
Benefit from research and development in areas such as insect bioconversion, anaerobic digestion and bio renewable evaluation. Fera is developing the UK's only industrial Insect Research Unit to support producers of insect derived products and position the region as supporting leading insect farming companies, waste operators and novel feed and food producers.

Bioeconomy is the production of renewable biological resources and the conversion of these resources and waste streams into value added products, such as food, feed, bio-based products and bioenergy. Its sectors and industries have strong innovation potential due to their use of a wide range of sciences, enabling and industrial technologies, along with local and tacit knowledge.

## Team up with key industry partners developing innovative solutions from food wastes

Yorkshire - already a pioneering centre of bioeconomy - is launching BioYorkshire (BY) a 10-year plan for sustainable innovation. Plans include district hubs for enterprise development, bio-based research institutes, demonstrator facilities for testing and scaling up and programmes of training and skills co-developed with industry, all underpinned with bioeconomy networking and investment.

Sources: Definition of Bio-economy from the European Commission, Innovating for Sustainable Growth - A Bioeconomy for Europe" (2012) . Definition of Circular Economy from World Economic Forum.



The circular economy avoids waste, makes the most of our resources and conserves the planet.

Sources: Biorenewables Centre, 2021. BioVale, Value from food agri waste, 2021. Anaerobic Digestion & Bioresources Association, About AD, 2020. Farm Tech Society, Presentation of Controlled Environment Agriculture and its potential, 2020.

Controlled Environment Agriculture - Plants

Controlled Environment Agriculture - Insects

Innovative Farming Technology

Bio Economy



# Explore North & West Yorkshire

A compelling case for your business

[SKILLS & RESEARCH](#)[CLUSTER INFORMATION](#)[SOFT LANDING LOCAL  
SUPPORT](#)[GOVERNMENT SECTOR  
SUPPORT](#)[CASE STUDIES](#)



# 3

## Integrate with leading research capability and collaborative practice

We can provide introductions to institutions dedicated to enabling the transfer of technology from research to agricultural and industrial applications

### Skills & research

Capitalise on world-class research, and gain the skills you need to succeed now and in the future.

#### University of Leeds – Global Food and Environment Institute (GFEI)

The Global Food and Environment Institute is an interdisciplinary research community, which brings together members from across academia, industry and public policy.

[www.leeds.ac.uk/global-food-environment-institute](http://www.leeds.ac.uk/global-food-environment-institute)

#### University of York – Centre for Novel Agricultural Products

The Centre for Novel Agricultural Products (CNAP) aims to realise the potential of plant, microbial and algal-based renewable resources through gene discovery. From developing sustainable food crops and biofuels to advancing plants for land decontamination, they maximise the value of plants without compromising food security.

[www.york.ac.uk/biology/centrefornovelagriculturalproducts/](http://www.york.ac.uk/biology/centrefornovelagriculturalproducts/)

#### Crop Health and Protection (CHAP)

CHAP, a UK Agri-Tech Centre funded by Innovate UK, brings together leading scientists, farmers, advisors, innovators and businesses to understand industry challenges, drive research and innovation and develop and trial solutions that transform crop systems. They work with partners to translate and promote these solutions for market adoption and improved crop productivity. Their mandate is to increase crop productivity for future generations through the uptake of new technologies.

[www.chap-solutions.co.uk](http://www.chap-solutions.co.uk)

#### N8 AgriFood

N8 Agrifood combine expertise and multiple disciplines from the 8 research intensive universities in the North of England – Durham, Lancaster, Leeds, Liverpool, Manchester, Newcastle, Sheffield and York. The programme takes a food systems approach to tackling the challenges facing food security. Through effective collaboration across the sector with industry, government, small to medium businesses, non-governmental organisations and charities, they aim to generate new knowledge and in turn take action to address these complex challenges.

[www.n8agrifood.ac.uk](http://www.n8agrifood.ac.uk)

#### Stockbridge Technology Centre (STC)

The Stockbridge Technology Centre was launched in 2001 to ensure continued technological developments for the horticultural industry. This grower-led initiative has created an independent horticultural centre of excellence supported by both the production and supply sectors of the industry.

[www.stockbridgetechnology.co.uk](http://www.stockbridgetechnology.co.uk)

#### Centre for Innovation Excellence in Livestock (CIEL)

CIEL is the UK's livestock innovation Centre, helping to introduce innovative technologies and processes into livestock production – UK and worldwide. They connect industry with world-class research capability and insight to successfully tackle key livestock challenges faced by the industry. [www.cielivestock.co.uk](http://www.cielivestock.co.uk)

#### Fera Science Ltd

A Joint Venture between Defra and Capita focused on supporting the agri-food industry. A multi-disciplinary science community addressing the challenges and delivering innovation in protecting and supporting the environment, agriculture and food production.

[www.fera.co.uk](http://www.fera.co.uk)

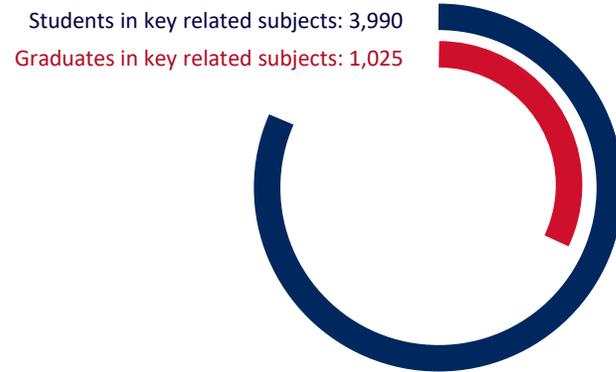
#### York Biotech Campus

York Biotech Campus is a proven facility for discovery, innovation and success. Situated a few miles north of York in an 80-acre parkland setting, the campus provides space for both entrepreneurs and start-ups through to scale-ups and established organisations in a flexible and unique scientific environment.

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

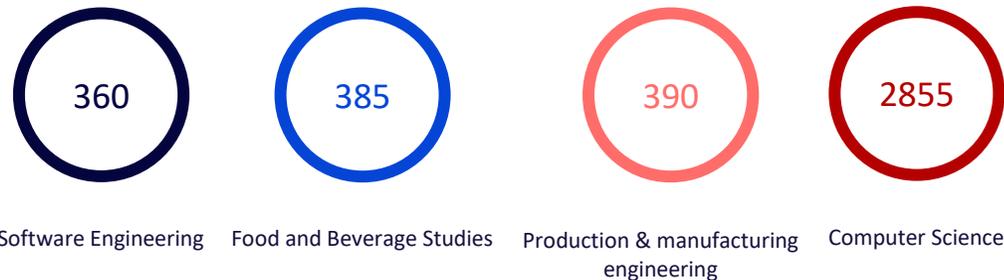
## Leading institutions developing a pipeline of talent for your business now and in the future

Universities and colleges in North and West Yorkshire are supporting a steady pipeline of students and graduates educated for the agri-tech sector.



The region has globally ranked universities are offering degrees in relevant courses.

Students currently studying at all North and West Yorkshire Higher Education institutes



The graduate pool is strengthened by agri-tech specific courses and world-class research centres.

### University of Leeds

**36,250**

students across all subjects

A Russell Group University, founded in 1904 and is now one of the biggest in the UK with more than 23,000 undergraduates, 8,000 postgraduates and 7,400 staff. The university hosts the Global Food and Environment Institute and the National Pig Centre.

[www.leeds.ac.uk](http://www.leeds.ac.uk)

### University of York

**19,470**

students across all subjects

This Russell Group University was founded in 1963 and has around 16,000 students and more than 30 academic departments and research centres. The University of York hosts the Biorenewables Development Centre. [www.york.ac.uk](http://www.york.ac.uk)

### University of Huddersfield

**17,295**

students across all subjects

The University was founded in 1992, and now has more than 17,000 students and recognised as a gold-rated university by the Teaching Excellence Framework (TEF).

[www.hud.ac.uk](http://www.hud.ac.uk)

### Leeds Beckett University

**23,275**

students across all subjects

Formerly known as Leeds Metropolitan University, is a public university in Leeds, West Yorkshire, England. It has campuses in the city centre and Headingley.

[www.leedsbeckett.ac.uk](http://www.leedsbeckett.ac.uk)

### University of Bradford

**9,665**

students across all subjects

A technology university with over 50 years of cutting-edge research experience. Their research is ranked in the top 50 in the UK (HEFCE, 2014) for research quality with three quarters being classed as either world-leading or internationally excellent. [www.bradford.ac.uk](http://www.bradford.ac.uk)



## Nurturing your workforce and providing the skills you need to succeed

North and West Yorkshire has the talent to enable companies to capitalise early on ideas that will shape the agri-tech sector

Collaborate with the region's colleges to access a pipeline of appropriately skilled people:

### Askham Bryan College

- › Askham Bryan College is one of the leading agriculture colleges in the UK and is the largest provider of specialist land-based further education in England.
- › The college has over 5,000 students.

### Bishop Burton College

- › Bishop Burton College and University Centre is one of the UK's leading agriculture educational institutions.
- › They specialise in Agriculture, Animal Management, Equine and Sport. As well as college level (Further Education) and university level (Higher Education) courses, they also offer apprenticeships and short courses.
- › The college recently opened its new £1.7m Centre for Precision Agriculture
- › The college has over 4,000 students.

### Yorkshire and Humber Institute of Technology

- › The Yorkshire & Humber Institute of Technology is one of twelve Institutes of Technology across England designed to increase access to higher level technical skills required by employers.
- › Higher technical qualifications such as HNCs, HNDs, Apprenticeships and Foundation Degrees in subjects such as:
- › Engineering and Engineering Technologies,
- › Manufacturing Technician,
- › Computing and Digital Technologies, Cyber Security, Software Development, Computer Games Development,
- › Precision Agriculture Technology, Agricultural Engineering,
- › Construction and the Built Environment

Access the Biorenewables Development Centre -The BDC bridges the gap between the world-class science base at the University of York and the needs of industry to develop and scale-up new greener processes and products. SME's based in Yorkshire or the Humber may be eligible for their funded business support

With multi-stakeholder, interdisciplinary research teams and strong academic networks, the region is able to draw on expertise quickly and specifically to meet the needs of your business.

Collaborate with Fera Science Ltd, which has the scientific and regulatory expertise to provide consultancy services to help you with every step of the regulatory framework process.

EPSRC National Facility for Innovative Robotics Systems in Leeds: A suite of technologies for robot design and construction that is among the most advanced in the world. Accessible for their industrial partners.



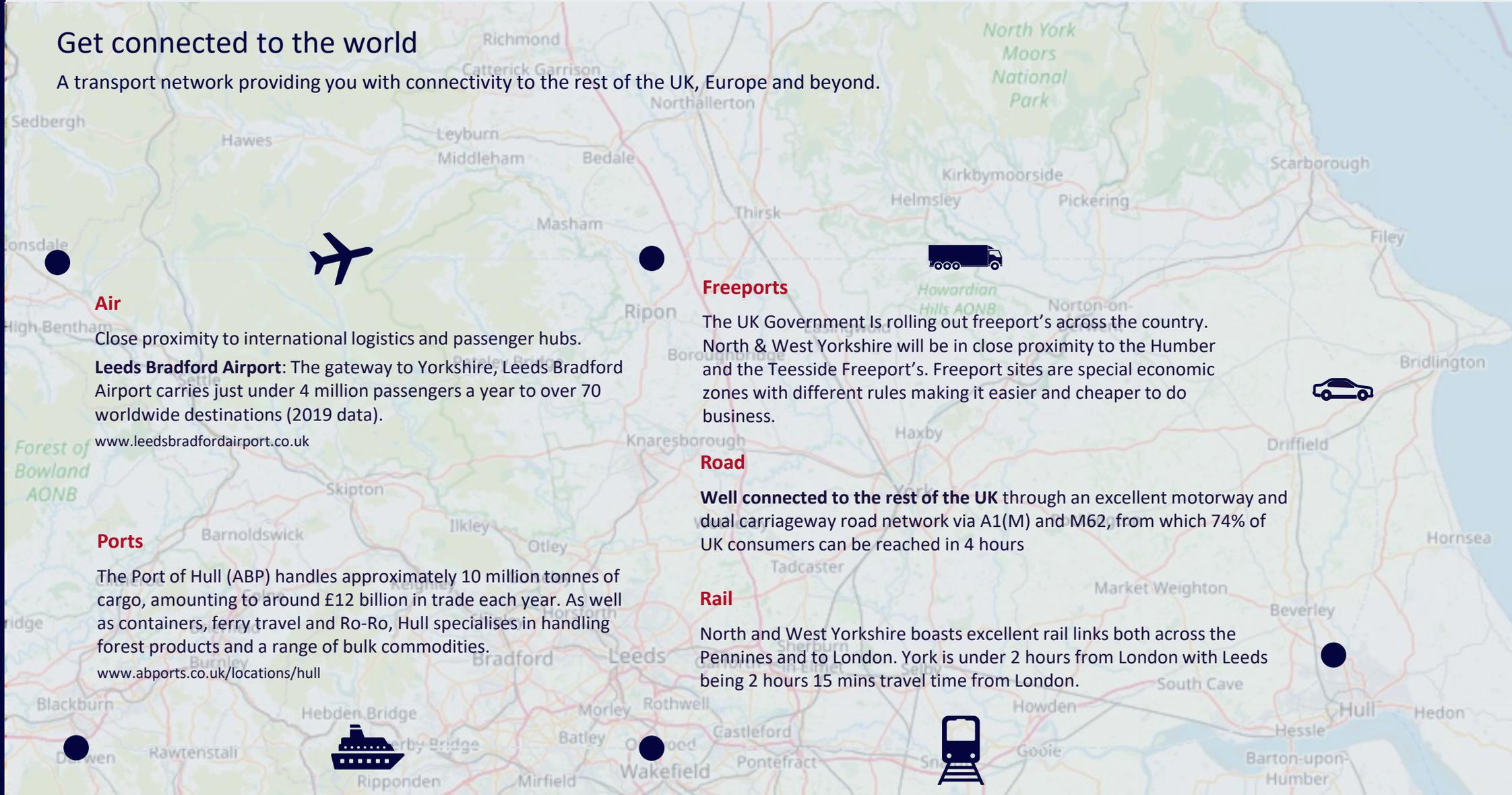
# 4

## Cluster information

North and West Yorkshire offers unrivalled transport options.

### Get connected to the world

A transport network providing you with connectivity to the rest of the UK, Europe and beyond.



#### Air

Close proximity to international logistics and passenger hubs.

**Leeds Bradford Airport:** The gateway to Yorkshire, Leeds Bradford Airport carries just under 4 million passengers a year to over 70 worldwide destinations (2019 data).

[www.leedsbradfordairport.co.uk](http://www.leedsbradfordairport.co.uk)

#### Ports

The Port of Hull (ABP) handles approximately 10 million tonnes of cargo, amounting to around £12 billion in trade each year. As well as containers, ferry travel and Ro-Ro, Hull specialises in handling forest products and a range of bulk commodities.

[www.abports.co.uk/locations/hull](http://www.abports.co.uk/locations/hull)

#### Freeports

The UK Government is rolling out freeport's across the country. North & West Yorkshire will be in close proximity to the Humber and the Teesside Freeport's. Freeport sites are special economic zones with different rules making it easier and cheaper to do business.

#### Road

**Well connected to the rest of the UK** through an excellent motorway and dual carriageway road network via A1(M) and M62, from which 74% of UK consumers can be reached in 4 hours

#### Rail

North and West Yorkshire boasts excellent rail links both across the Pennines and to London. York is under 2 hours from London with Leeds being 2 hours 15 mins travel time from London.



# Capitalise on a clear customer, partner and supply base

## Collaborate with other key companies through Yorkshire's BioVale Organisation and BioYorkshire

**BioVale** strengthens Yorkshire and the Humber's circular bioeconomy through their support for bio-based innovation and business. It is a membership organisation bringing together over 600 companies with a shared interest in a greener economy. Yorkshire has a thriving farming, food and drink, and chemical sectors that all benefit from globally renowned R&D, unique scale-up facilities and green local policy. [www.biovale.org](http://www.biovale.org)

**BioYorkshire (BY)** a 10-year plan for sustainable innovation, is a partnership between the University of York, FeraScience (a private sector research institute) and AskhamBryan (a land-based college) with involvement of industry, local government and other regional stakeholders. BY will create a global, bio-innovation powerhouse in Yorkshire and the north of England by building on the region's unique strengths in research, industry and farming. Using bio-based innovation, world-class research and translation facilities, a network of specialised business incubators, training, networking and entrepreneurial support, BY will drive a green recovery that delivers net zero, generates skilled jobs and creates resilient supply chains. [features.york.ac.uk/bioyorkshire/index.html](http://features.york.ac.uk/bioyorkshire/index.html)

700 Food manufacturers		19,700 data analysts 2,000 AI specialists		37,000+ employed in farm labour
	4.5 million consumers within 35-mile radius		13,300 farms in the area	



### UK Grade 1 agricultural land

17% of the UK's cereal area, all the UK's major arable crops are produced (wheat, oilseed rape, barley, sugar beet, potatoes, peas, beans, maize).



### Local Companies

- > Perfectly Fresh
- > Greencore



### Innovative Technology Providers

- > Vertically Urban
- > P3P Partners
- > N2 Applied
- > Gelponics



### Supply Chain

- > Fertilisers: ICL Specialty Fertilisers
- > Seeds: Breeders Seeds
- > Growing media: ICL Specialty Fertilisers

**Stockbridge Technology Centre**

An independent horticultural centre of excellence, Stockbridge has over 70ha of good quality land, 40 modern glasshouses and modern labs and culture rooms.

[www.stockbridgetechnology.co.uk](http://www.stockbridgetechnology.co.uk)

**C4DI Incubator**

C4DI is an incubator that helps tech companies grow, and traditional businesses innovate. C4DI Northallerton is an exciting new campus focussed on helping tech companies grow and traditional businesses innovate within the agriculture and food processing sectors.

[www.c4di.co.uk](http://www.c4di.co.uk)



# 5

## Soft landing & local support

A cost competitive location and soft landing support packages to support your investment.

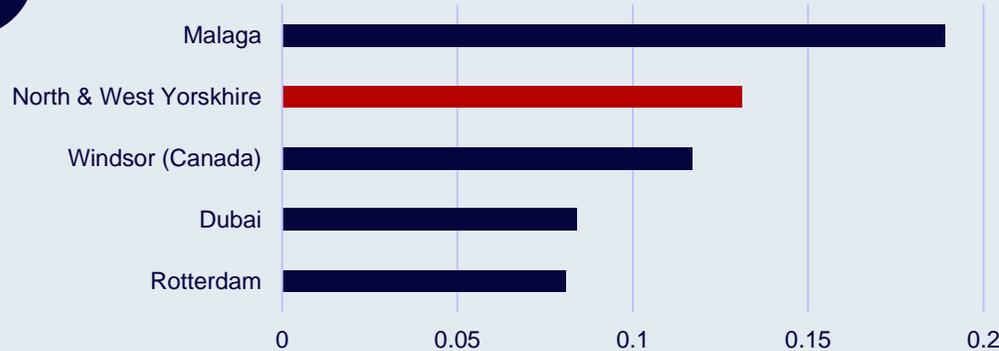
## A competitive package against other leading global locations

Our industry insights identify key cost drivers for this industry. North & West Yorkshire provide:



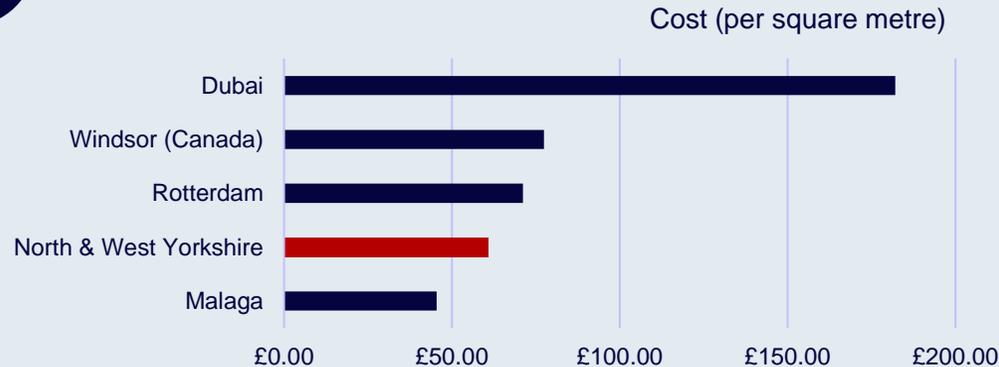
### Competitive Electricity Costs

North & West Yorkshire offers competitive electricity costs in the UK and other controlled environment agriculture clusters in Europe and North America.  
Cost (per kWh)



### Competitive Industrial Costs

The industrial space costs in North & West Yorkshire are amongst the most reasonable in Europe and North America  
Cost (per square metre)

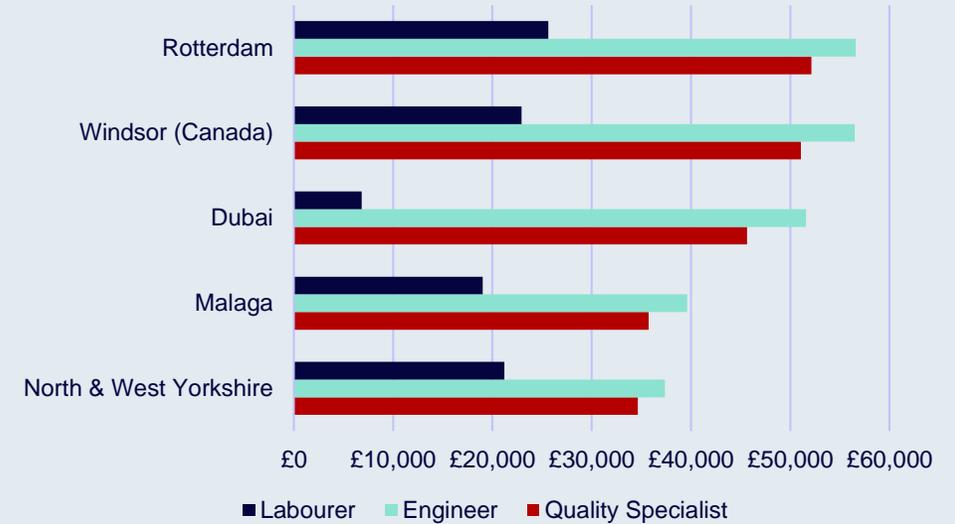


Source: fDi Benchmark from the Financial Times Ltd 2021



### Cost Effective Salaries

Salary costs in North and West Yorkshire are competitive against other controlled environment clusters.



Salary costs in GBP. Averages in £000s (European cities converted from €, Canadian cities converted from C\$) and United Arab Emirates dirham (AED).



## North & West Yorkshire have the locations you need to expand your business

North and West Yorkshire have a number of locations that will suit a controlled environment agriculture specialist to set up the UK including:

### Kellingley Colliery – just one of the opportunity sites in the area

A former coal mine, closed in 2015, represents an exciting opportunity for redevelopment with a range of potential use including those in Controlled Environment Agriculture and bio economy.

### Location and Access

- › Located between Junction 33 (3.7 miles west) and Junction 34 (3.2 miles east) and approximately 4 miles from the strategic M62 / A1(M) intersection.

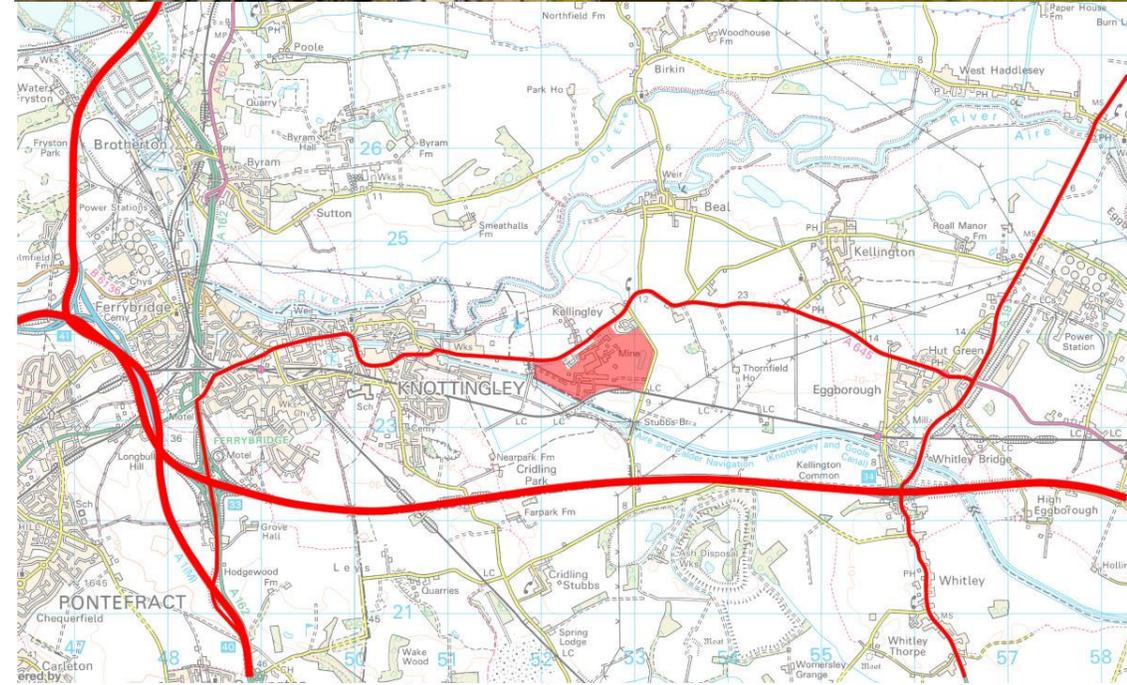
### Description

- › 33.09 ha (81.86 Acres) development site with outline planning permission for industrial / warehouse development uses falling within B1c, B2 and B8 uses.
- › The site benefits from a live rail connection.
- › Planning permission is in place for an energy from waste centre.
- › Energy is also available from a gas turbine facility on site converting the methane from the former coal mine to generate electricity. The opportunity to develop sustainable energy options such as CHP is to be discussed.
- › The site also benefits from the availability of solar powered produced from an adjacent solar farm.
- › The site runs alongside the River Aire.

### Size

- › The entire site extends to around 330,000 Sq.m (81.5 acres)
- › The options are available at Kellingley to specifically suit the requirements of the end user.

Support doesn't end once you've landed. Local specialist advice is available throughout the entire journey your business takes.





## Access a well-connected network of support

Local partners in North and West Yorkshire will assist and work with you across your entire business journey.

### **Leeds City Region LEP & York and North Yorkshire LEP**

Leeds City Region LEP & York and North Yorkshire LEP support business by providing access to a wide range of national and local support and funding, so it is easy for you to access the help you need. Leeds City Region & York and North Yorkshire LEP are here to support investors and businesses in their decision to move into the area. The teams will work with clients to:

- › De-risk the investment case – financially and operationally
- › Making direct grant funding available.
- › Provide facts and figures to ensure they have realistic assumptions in your business case
- › Identify the right commercial property
- › Understand the labour market and source the right staff
- › Introduce them to networks in the Leeds City Region LEP & York and North Yorkshire LEP to help their business grow.

[www.the-lep.com/business-support/](http://www.the-lep.com/business-support/)

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





# 6

## Government & sector support

A dynamic and flexible agricultural sector, underpinned by a supportive regulatory environment.

## The UK wants to be at the heart of the Agri-tech revolution

**Upon leaving the EU, the UK's agriculture sector will benefit from changes and support including:**

- Introducing the Environmental Land Management scheme to incentivise sustainable farming practices, create habitats for nature recovery and establish new woodland to help tackle climate change.
- Investing in improving animal health and welfare as part of our sustainable farming approach. This will initially focus on controlling or eradicating endemic diseases amongst cattle, pigs and sheep .
- Direct Payments will be reduced fairly, starting from the 2021 Basic Payment Scheme year, with the money released being used to fund new grants and schemes to boost farmers' productivity and reward environmental improvements.
- Launching a Farming Investment Fund,

which will support innovation and productivity. This will open for applications in 2022 and will be used to offer grants for equipment, technology and infrastructure for the future.

- Simplifying and improving existing schemes and their application processes further from January 2021 to reduce the burden on farmers, and we will take a modern approach to regulation, cutting unnecessary red tape for farmers and working together with industry to design a more targeted regulatory system.

## The Path to Sustainable Farming: An Agricultural Transition Plan 2021 to 2024

On 1 January 2021 the agricultural transition period started. Between 2021 and 2027, the Government will gradually reduce and then stop untargeted Direct Payments. The Government will invest the money that they free up to support agriculture in different ways. They will pay farmers to improve the environment, improve animal health and welfare, and reduce carbon emissions.

There will be three levels of support aimed at paying for sustainable farming practices, creating habitats for nature recovery and making landscape-scale change such as establishing new woodland and other ecosystem services.

[www.gov.uk/government/publications/agricultural-transition-plan-2021-to-2024](https://www.gov.uk/government/publications/agricultural-transition-plan-2021-to-2024)

## The Farming Investment Fund will be launched in 2022, split into two sections

**Farming Equipment and Technology Fund**, - offer small grants to contribute towards the purchase of a list of specified items. Farmers can apply for a grant to buy items from a set list of equipment, technology and small infrastructure investments. It is based on the current Countryside Productivity Small Grant scheme.

**Farming Transformation Fund**, - Grants awarded from The Farming Transformation Fund will support larger or more complicated investments. It is based on the Countryside Productivity Large Grant scheme which was structured around a number of themes. In the past we supported water resource management, adding value to agri-food and improving farm productivity.



## UK and regional industry bodies can provide you with quick and easy links to suppliers and customers

**Chartered Inst. Of Horticulture**  
the professional voice for horticulture

**British Growers Association**  
Represents all parts of the fresh produce supply chain in the UK.

**Grow Yorkshire**  
Grow Yorkshire brings together organisations offering extensive assistance to farmers and farm businesses.

**National Farmers Union**  
The National Farmers' Union is a member organisation/industry association for farmers in England and Wales.

**Food and Drink Federation**  
The voice of the UK food industry representing all of the supply chain nationally.

**UK Urban AgriTech**  
UKUAT brings together the UK's key players in modern agricultural technologies.

**Anaerobic Digestion & Bioresources Assoc.**  
ADBA aims to facilitate the anaerobic digestion (AD) industry's growth.

**Commercial Horticultural Association** The British trade association for manufacturers and suppliers of plants, products and services to commercial horticultural growers.

**UK Soil Association**  
Soil Association is a membership charity campaigning for healthy, humane and sustainable food, farming and land use.

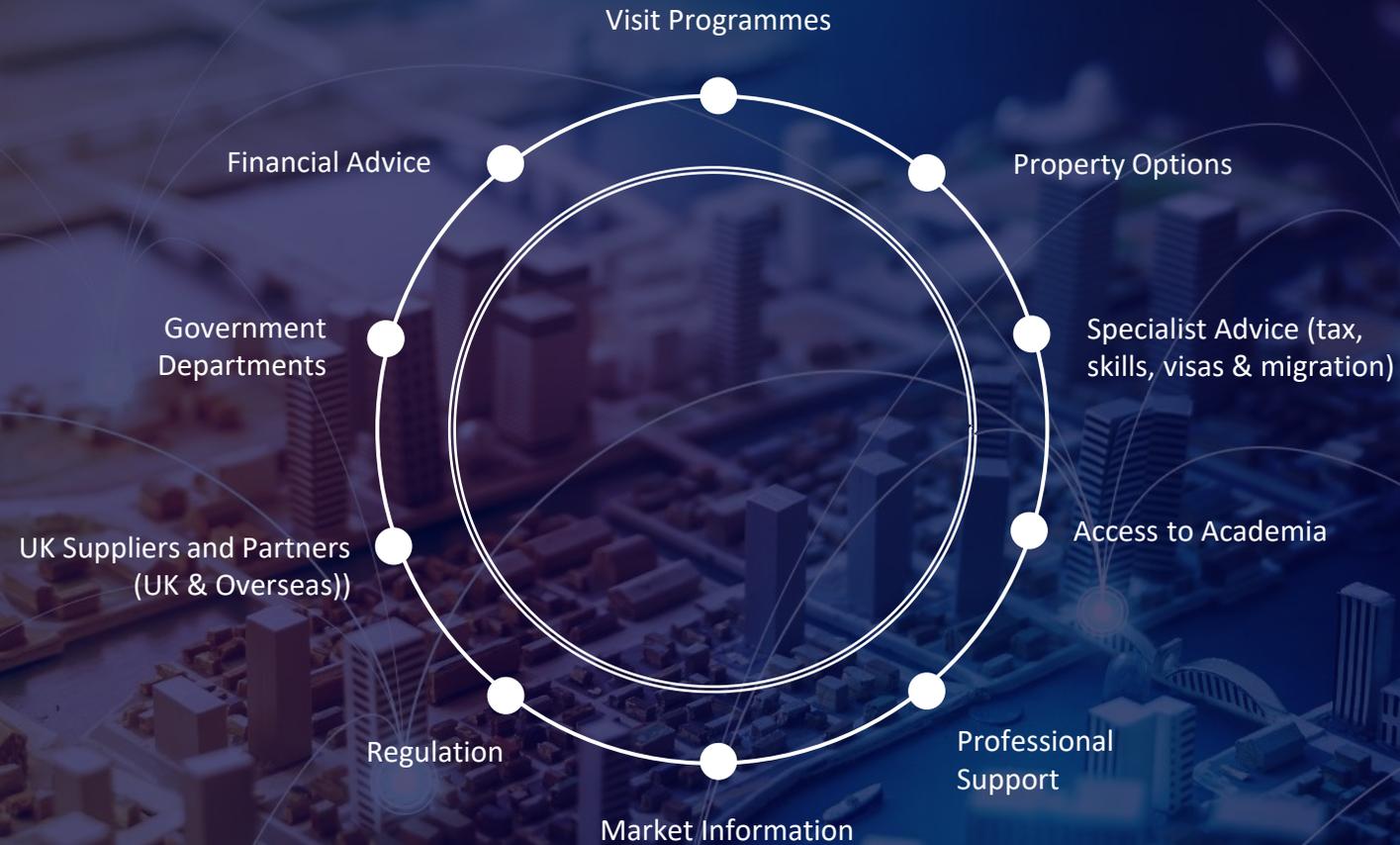
**UK Fresh Produce Network**  
Links UK fresh produce companies with the local and national supply chain.

**Yorkshire Agricultural Society**  
YAS invests over half a million pounds per year supporting and promoting agriculture in Yorkshire

**Horticultural Trades Association**  
The UK's trade association for the UK garden industry.



## Benefit from the right support from local partners and Government to ensure a seamless investor process



Real companies. Real experience. Real value.

## Case Studies

How North and West Yorkshire can  
work for your business

Fera Science Ltd

P3P Partners

Gelponics - CHAP





Original thinking... applied



### Fera Science Ltd

A national and international centre of excellence for interdisciplinary investigation and problem solving across the food, agriculture and environment sector proud to have been operating in Yorkshire since 1966.

From farmers to processors, packers, formulators, retailers and hospitality the food chain is faced with unprecedented challenges - but also new opportunities.

There is no singular approach to delivering food systems fit for the future. As food ecosystems evolve, there is a wealth of emerging technologies to help organisations build new capabilities to address tomorrow's needs.

Whilst these technologies are individually powerful, it is the bringing together of people, ideas and resources to deliver products, processes, landscapes and services that build successful businesses and communities that will deliver the food systems of the future.

Fera Science's origins in delivering world-class science began over 100 years ago as a Government laboratory known as the Institute for Plant Pathology. For the last 25 years Fera has operated out of the Sand Hutton estate in Yorkshire and we now share the Sand Hutton site with a wide range of other bio and life science businesses on the York Biotech Campus creating a diverse and vibrant research community.

The success of Fera, initially as a government laboratory and more recently as a commercial laboratory, via a joint venture with Defra, owes much to our close working relationship with others in the region such as the regional planning authorities, Ryedale District Council, the local communities, residents, and the universities. An ethos that continues today and sits at the heart of Fera's engagement across the Yorkshire region.

True to our heritage we are proud that our continued successes helps to address some of today's biggest challenges, including coping with the impact of global population growth and the need to make efficient sustainable use of natural resources. We are pioneers in new diagnostic approaches and analytical science driving ingenious products and techniques, and our research collaborations protect and support the environment addressing the global challenges leveraging our expertise in biology, biotechnology, chemistry, ecology, social and data science.

As we look to our future we continue to collaborate with public sector customers and industry clients and partners to adapt to issues arising from climate change and the focus on the environment and regenerative agriculture and sustainable food production, as well as greater focus on stable food and feed supply chains nationally and globally. These are central to a number of our strategic initiatives – specifically, the regional collaboration under **BioYorkshire** with the University of York, the local Enterprise Partnership, Ocado Technologies, and Askham Bryan College; and our ambition to create a **UK Agri-Food Innovation Venture Fund** in partnership with Milltrust Agriculture Investments and an ecosystem of partners, entrepreneurs, collaborators, incubators and investors from across the region and the UK. As well as our investment to build a **regional centre of excellence for insect farming and insect based proteins** for food and feed through the build in 2021 of the **Fera Insect Research Unit**.

More information on our capabilities and work is available here - [Fera Science Ltd](#)

Read more case studies

Fera Ltd

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## P3P Food Technology Park

At P3P we strive to develop sites which are efficient and sustainable, and which will support the businesses they supply with long term, reliable energy. The opportunity presented by the Selby site when we acquired it in 2016 was unlike any we have realised as a business up to that point. It allowed us to expand our glasshouse growing and energy supply portfolio, while also providing the ideal springboard for our vertical farming and other 'Agri-tech' plans.

### Assistance from the LEP/Council

Since acquiring the site, we have engaged very closely with the local council and LEP around our site masterplan. They have been very supportive of our drive to reinvest in the site and extend its life through upgraded energy infrastructure, a new packhouse, our Vertical Farming R&D facility and most recently, our full-scale vertical farming facility, which will be the largest of its kind in the UK.

### Any proximity cluster or access to talent

We have been able to take advantage of the site's proximity to specialist talent and expertise from nearby suppliers and contractors. Our Vertical Farming R&D facility has already created 4 highly skilled technology and scientific jobs at the site.

[Read more case studies](#)

Fera Ltd

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CHAP Innovation Network Lead Dr Harry Langford said: “There is a significant market demand for more sustainable hydroponic substrates. This project is an exciting opportunity to optimise and scale-up a novel hydrogel product and demonstrate this product directly to the end-user, within a state-of-the-art, automated production system”.



AEH Innovative Hydrogel Founder Dr Beenish Siddique said: “The two unique selling points of the GelPonics system are the hydrogel itself, which has a significant water-holding capacity and is both recyclable and reusable, and the ‘shift-changer’ system, that uses graphene technology for precision nutrient delivery to the plant roots”



### GelPonics - CHAP

The GelPonics project is a collaboration between start-up AEH Innovative Hydrogel and CHAP, supported by the Graphene Engineering and Innovation Centre (GEIC) of Manchester University, Grobotic Systems and CHAP partner Stockbridge Technology Centre (STC).

The project, which launched on 1st September 2020, is funded by Innovate UK’s Transforming Food Production challenge: ‘Science and Technology into Practice’ and will run for a total of 26 months. Hydroponic systems generally use a substrate, such as rock wool, coir or peat, to support plant roots and facilitate water and nutrient uptake. As all these substrate options are unsustainable, they tend to be the largest contributor to the carbon footprint of vertical farming or glasshouse production.

With global controlled environment production expanding significantly, alternatives need to be sought that can decarbonise agriculture while meeting grower specifications and, crucially, competing on price. GelPonics technology can improve the sustainability of production and, by optimising inputs and crop resilience, cut operational expenditure. As well as being recyclable, the hydrogel product can be reused locally as a soil amendment to help sequester carbon. It also has substantial export potential in dry form to countries with water scarcity.

The project will be delivered in three principal phases. Phase 1 will optimise the hydrogel formulation and shift-changer nutrient delivery system, encompassing a state-of-the-art graphene membrane, alongside comprehensive industry analysis. Phase 2 will focus on prototyping trials in CHAP’s Vertical Farming Development Centre, and STC’s LED Tomato Glasshouse, to optimise plant growth within the GelPonics system. System development will combine sensors with automation to create a fully automated rig for the hydrogel substrate, integrated with renewable energy. Phase 3 will deliver a full, semi-commercial trial of the GelPonics system for both leafy green and tomato production, as well as demonstrating the technology and its potential for low-carbon horticulture.

[Read more case studies](#)

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P3P Partners

GelPonics - CHAP



## Dedicated to finding the ideal fit for your business

The Department for International Trade (DIT) and local partners are here to support you in navigating the opportunities across the UK – to find the right fit for your business.

Based on our experience of investors like you, this attractive opportunity demonstrates the strength and depth of capability available locally and in central Government to support you, and maximise your investment in the UK.

For investors interested in considering high value options further – we provide a bespoke service tailored to your needs from investment inception, right through to aftercare support.

We pride ourselves in developing long-term relationships with our clients, predicated on a full understanding of their needs.

## Contact us

### Investment Services Team

T: +44(0) 207 000 9012

[How to set up a business in the UK](#)

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#### Department for International Trade

The UK's Department for International Trade (DIT) has overall responsibility for promoting UK trade across the world and attracting foreign investment to our economy. We are a specialised government body with responsibility for negotiating international trade policy, supporting business, as well as delivering an outward-looking trade diplomacy strategy.

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