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Executive Summary

Access a springboard for you to exploit the global £139 billion aquaculture market opportunity

An opportunity to enter the UK aquaculture market to meet growing national and global demand for fish, shellfish and aquatic plants by developing and deploying technologies.

Growth opportunities exist in a sustainable UK aquaculture supply chain by developing and deploying a diverse range of technologies (sensors, automation, engineering) for life support (nutritional feed, health and welfare), farming and processing fish for sale.

The UK domestic aquaculture industry is:

- the 8th largest producer of finfish from marine and coastal aquaculture in the world
- worth an estimated £1.4 billion
- expected to grow faster than the UK economy over the next 10 years
- creating huge opportunities to increase farming of other fish or shellfish, beyond salmon

The UK – a springboard for you to exploit the global £139 bn aquaculture market opportunity



1

Executive summary

Contribute to an environmental, economic and socially sustainable aquaculture supply chain

Use the unique natural assets, a sustainable environment and the local infrastructure found in Dorset to support the growth of your business

Dorset – A commercial advantage to investors. Find the perfect setting for aquaculture companies and technology providers to flourish in a rich coastline

Work alongside the Centre for Environment, Fisheries and Aquaculture Science (Cefas) - extensive experience of the regulation of aquaculture systems and deploying innovative, cutting edge technologies alongside cost-effective data sources

Access an integrated Supply Chain with a skilled engineering, marine and scientific workforce, at competitive costs

Expect a ready supply of high-calibre science, technology and labour with industry centred training programmes in Higher Education Institutions and Centres of Scientific Excellence

Take advantage of Marine Service companies (e.g. Quest <u>Marine and Carlin Boat</u> Charters) who will help businesses with cranage, diving expertise, tug boats, dredging and experience of aquaculture farming

Consider great locations in Poole and Portland Harbours providing sheltered bases for operations in small, specifically designed sea areas with infrastructure and space for the construction of more hatcheries and aquaculture facilities on land

Use support from local partners, and national government through the <u>Seafood 2040 Strategic</u>
Framework



2

The opportunity

Using the unique natural assets, a sustainable environment and the local infrastructure found in Dorset to support the growth of your business

National and Global Demand for Seafood

Sustainable Aguaculture

Technology
Development &
Deployment

5G Testbed

Help meet the national and global demand for fish, shellfish and aquatic plants from Dorset

Global seafood consumption has more than doubled in the past 50 years, putting stress on the sustainability of fishing

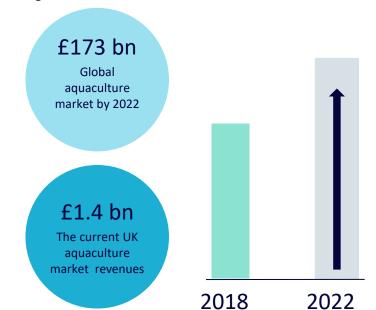
Demand:

Seafood purchases in Great Britain are estimated to be worth £6.61bn while aquaculture represents only 17% of this supply. An opportunity exists to meet this demand through growth in sustainable aquaculture.

Globally, the average annual increase in fish consumption (3.2%) has outpaced population growth (1.6%)

Aquaculture:

- is projected to be the prime source of seafood by 2030, as global demand grows and wild capture fisheries approach their maximum take
- when practiced responsibly, can help provide livelihoods and feed a global population that will reach nine billion by 2050.
- offers business growth by improved logistics systems, improvements in sustainable practices and diversification of species.





Contribute to an environmental, economic and socially sustainable aquaculture supply chain

Opportunities exist in Dorset for truly sustainable aquaculture systems that have:

- Minimal Environmental Impacts No significant disruption to the ecosystem, or loss of biodiversity or substantial pollution impacts.
- Economic Value Provide a viable business model with good long-term prospects.
- Social Contribution Contribute to community well-being and are socially responsible.

Recommendations include:

- Aquaculture growth strategy;
- > Potential for priority aquaculture zones;

- > Protection of shellfish waters; and
- > Review and simplification of legislation and regulation.

Seafood 2040 Strategic Framework

The result of shared enterprise from stakeholders across the English seafood supply chain that sets out a vision for an industry that is sustainable and truly thriving - a success story built on collaboration, innovation and best practice (please click here)

National and Global Demand for Seafood

> Sustainable Aquaculture

Technology Development & Deployment

5G Testbed

Sources: Cefas, Seafood 2040



Access world class science, a progressive supply chain and dynamic business environment

Sustainable land and sea - based aquaculture systems represent opportunities for the aquaculture sector.

Examples include:

- **On Land:** Recirculating Aquaculture Systems (RAS) to create suitable conditions for aquaculture using indoor tanks, pumps, aerators and filters; Aquaponics systems using hydroponics (growing plants without soil) provide opportunities to strengthen sustainable aquaculture, organic crop production and reduce water consumption.
- In the Sea: Developing technology and alternative methods of combating diseases that minimise environmental impacts; along with shellfish farming equipment designed to perform in extreme environments.

Growth opportunities exist in sustainable aquaculture supply chains by developing and deploying a diverse range of technologies (sensors, automation, engineering) for breeding, life support (nutritional feed, health and welfare), farming to processing fish for sale.

National and Global Demand for Seafood

> Sustainable Aquaculture

Technology Development & Deployment

5G Testbed

Work with the existing Agri-Tech and marine engineering cluster in the South-West to develop technologies for sustainable aquaculture

Digital technologies disrupting aquaculture that provide investment opportunities include:

Technology	Aquaculture opportunity
3D Printing	Hybrid aquaponic systems
Robotics	Examine and repair nets/cages remotely
Drones	Monitor/inspect offshore fish farms
Sensors	Monitor oxygen levels, water temperature, heart rate and metabolism
Artificial Intelligence	Improve decision-making
AR / VR	Analyse mortalities, health status and environmental parameters
Blockchain	Verify sustainability across the supply chain

Sources: https://ag.alltech.com/en/blog/8-digital-technologies-disrupting-aquaculture

Capitalise on a 5G testbed to support your product development

Dorset has been chosen as the location for an £8m Department for Digital, Culture, Media & Sport (DCMS) test bed & trials project which is being led by Dorset Council. There are opportunities for organisations to be involved from across the aquaculture sector and related industries. The trials are looking at how 5G can be delivered to rural areas and how it can reduce costs, reduce waste and support sustainable practices.

The project will deliver a private 5G network for aquaculture to Portland Port:

- > Working with local industry and academia
- > With support from local authorities
- > In collaboration with South West aquaculture network

National and Global Demand for Seafood

> Sustainable Aquaculture

Technology Development & Deployment

5G Testbed

Currently planned trials in aquaculture will deliver:

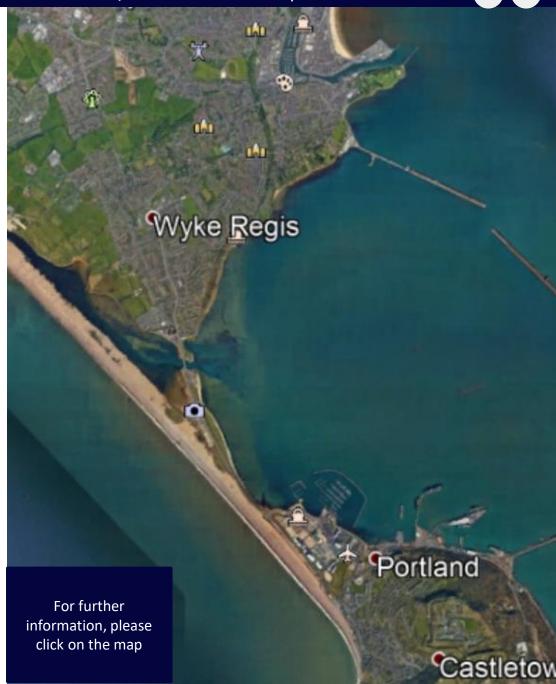
- > Water monitoring in the port
- > Transfer of live underwater image data

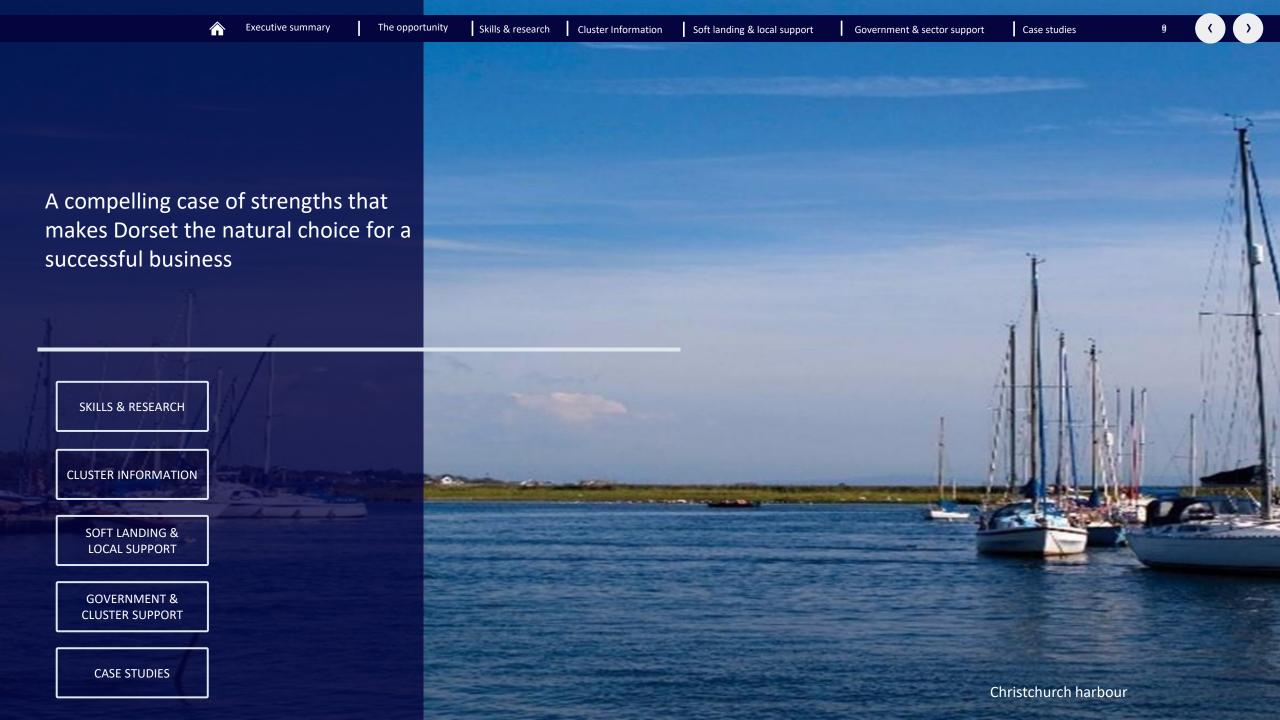












3

Skills & Research

Access worldclass research, help to translate that to a business setting, and all the skills you need to succeed

Leading institutions developing a pipeline of talent for your future

Dorset is perfectly positioned to ensure you have access to the skills you need, now and for the future. Cutting edge marine and aquaculture programmes in Dorset and the wider South West are also addressing key industry issues including sustainability, technology, training, supply chains and production.

Find industry centred training programmes in Higher Education Institutions, you can expect a ready supply of high-calibre labour

- > Exeter, Plymouth, Portsmouth, and Southampton universities and Sparsholt College offer degree courses linked to the needs of the aquaculture and wider marine sector.
- Non-degree level courses are also available including diplomas in Fisheries Management, and Fish husbandry at Bridgwater College.
- › Kingston Maurward College offers a Foundation Degree in Marine Ecology and Conservation, a City and Guilds Technical Certificate Level 2 (GCSE grade) course (fish health and biology, game and course angling, freshwater sport and fishery management) and a Level 3 (A Level equivalent) will follow next year.

The region also has world-leading marine and maritime education and research institutions in a number of fields. The Southern England Region has three of the UK's four marine research and development centres at the University of Southampton, University of Portsmouth and the University of Plymouth.

The graduate pool is strengthened by aquaculture specific courses and world-class research centres

	Partner of the Sustainable Aquaculture Futures Centre
University of Exeter	(with Cefas), employing combined strengths to develop
20,000	scientific research for societal benefit. Member of the
students	Russell Group – 98% of its research is rated as
	international quality

University of Ply	mouth
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23,000

students across

School of Biological and Marine Sciences offering courses including MSc Sustainable Aquaculture Systems. 2,900 staff and £100 million network of business support facilities

Bournemouth University

19,000

students

Department of Life & Environmental Sciences offering courses in Marine Ecology and Conservation + Marine and Freshwater Management – with links to Kingston Maurward College. One of the top 200 young universities in the world.

Sparsholt College

6,500

students across

Recognised worldwide for expertise in providing education in aquaculture and fisheries studies. One of the leading providers of university level courses for the land and environment



Complemented by access to world-class science

Providing you with cutting edge research and innovation in environmental impact and aquatic animal health

Cefas

Lowestoft and Weymouth

Recognised leader in aquaculture science. Cefas has extensive experience of the regulation of all aquaculture systems and deploy innovative, cutting edge technologies alongside complementary and cost-effective data sources.

Cefas has links with a diverse range of stakeholders and creates significant opportunities to partner in research and development of new technologies and processes. For example, regulatory testing and modelling for risk is done at the Weymouth Laboratory.

The Cefas regulatory toolbox ensures aquaculture supply chain companies have all the information required to set up successfully, through a single portal.

Sustainable Aquaculture Futures

Exeter University and Cefas

Draws upon research strengths to undertake interdisciplinary activity associated with:

- Aquatic disease diagnosis, therapeutics and mitigation
- Anti-microbial resistance
- Genomes and host pathogen interactions
- Aquatic disease modelling and epidemiology
- Environment and animal health
- Aquatic food safety

The Marine Innovation Centre

Plymouth University

Organises workshops, networking events and face-to-face meetings to help businesses unlock the value of R&D, solve technical challenges, improve products and processes and capitalise on new market opportunities.

Institute of Marine Sciences

Portsmouth University

An internationally known marine station providing high quality marine research and teaching. They have developed the sites, facilities, equipment and the expertise that leading businesses want.

This includes the Aquatic Research Centre that houses a state-of-the-art aquarium and sea-water system, and the shallow water research and testing platform in Langstone harbour.



Conservation practice in Dorset to succeed in aquaculture

Providing you with cutting edge research and data into conservation in Dorset

Game and Wildlife Conservation Trust Salmon & Trout Research Centre in East Stoke, Dorset.

Monitoring Atlantic salmon numbers in the River Frome since 1973, creating one of the most comprehensive records of salmon movement in England and Wales.

Working in collaboration with teams throughout Europe to study the global decline in salmon numbers.

Trout studies aim to understand the ramifications of stocking in order to ascertain what methods are most favourable to the natural wild stock. In addition, research is undertaken to evaluate habitat restoration programmes on selected river catchments.

Blue Marine Foundation

In Lyme Bay, Dorset, BLUE has established a model of sustainable fishing hailed as a 'world first' by bringing together fishermen with marine authorities and scientists to shape conservation measures to protect their fishery. The model combines science and tech to inform best practice management and improve traceability of catch size and location.

Investment in chiller units has improved quality and was hailed as 'the best thing to happen in this port in 100 years'.

Fishermen receive higher prices with the Reserve Seafood Label created through a partnership with the Seafish Responsible Fishing Scheme (RFS) to build sustainable, traceable and high quality credentials. Habitats and stocks are also recovering. The Lyme Bay model is now being rolled out around the UK coast and in the Mediterranean.

Southern IFCA

Inshore Fisheries and Conservation Authorities lead. champion and manage a sustainable marine environment and inshore fisheries, by successfully securing the right balance between social, environmental and economic benefits to ensure healthy seas, sustainable fisheries and a viable industry.

Case studies

Southern IECA covers the inshore waters of Hampshire, Dorset and the Isle of Wight out to 6 nautical miles; working both on land and at sea to balance sustainable fisheries with a sustainable environment.

The District contains a diverse range of habitats and species within European Marine Sites and Marine Conservation Zones and IFCA evidence collection ranges from impact surveys to habitat mapping and underwater video footage.



Executive summary

The opportunity

Skills & research

Cluster Information

Soft landing & local support



Cluster Information

Dorset allows for seamless access and rapid freight distribution between air, land and sea.

Access a fully integrated logistics network

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



Air

Bournemouth Airport is receiving major investment for key infrastructure developments, and offers domestic and international flights to major cities within the UK, Europe and worldwide.

> 30+ Global Destinations

Exeter and Southampton Airports also offer more than 50 international destinations, attracting a large number of passengers from the wider South West region.

Rail

The Rail Network connects Dorset to the rest of the UK, London Waterloo being within 1.5 hours travelling time.



Road

Dorset's road network has been recently upgraded, is well connected and allows for direct access to the South West region and beyond.



Shipping

Dorset has 3 strategically located ports (Poole, Weymouth and Portland) which provide valuable supply chain and deployment support for aquaculture projects.

Southampton, Portsmouth and Plymouth Ports are also strategically located to support marine and aquaculture projects in the South West region.











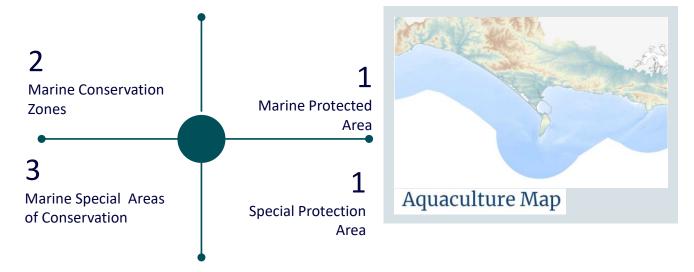
The natural choice for your aquaculture investment

Dorset has unique natural assets, a sustainable environment and the local infrastructure in place to support the growth of the local aquaculture sector and your business.

The coastline has created the perfect setting for aquaculture companies and technology providers to flourish. This includes:

- Shallow and sheltered harbours and land based development opportunities for hatcheries and recirculation systems;
- Onshore areas with potential for development of processing facilities etc;
- Excellent water quality and growth conditions for shellfish especially;
- Warm coastal sea water temperatures and less aggressive tidal flows than found in competitor sites – fostering opportunities to produce a wide variety of fish, shellfish, molluscs and plants; and
- A vibrant tourist industry with demand for local fresh fish and renowned fish restaurants in location.

In January 2020 Cefas completed a full scale mapping exercise to identify potential sites to develop aquaculture projects in Dorset. The outputs are hosted on the Dorset Aquaculture hub www.dorsetaquaculture.co.uk. The area hosts:



Poole and Portland harbours provide sheltered bases for operations in the open ocean (small, specifically designed sea areas) and have infrastructure and space for the construction of more hatcheries and aquaculture facilities on-land.

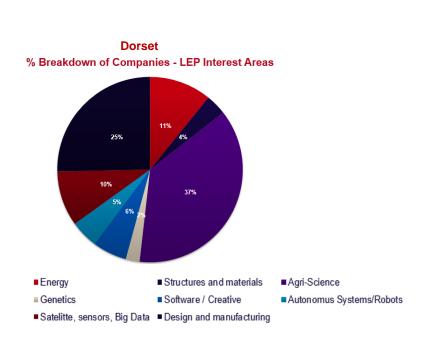
In-land areas and on-shore facilities within both ports are also available and ready to be developed as well as facilities at other notable locations such as Kingston Maurward College.

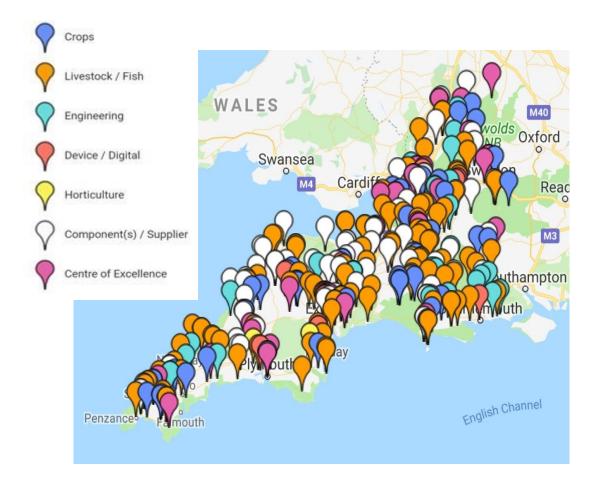
Access to the South-West Agri-Tech Cluster for collaboration

World-Class technology supporting efficiency and innovation in celebrated West Country livestock farming, fishing and food industries.

The South West is England's largest rural region with rich, diverse natural resources, a strong and growing network of over 200 innovative Agri-Tech companies, working with industry leading academics and R&D institutions.

The area attracts many major employers including Arla Foods UK, Danone, Mole Valley Farms, Mullers, Thatchers Cider, and Yeo Valley Farms Production. Complementary sector strengths include Aerospace, Marine, Nuclear, Space, IT, Tech and Pharmaceuticals.





Gain direct access to great locations to drive your business growth making Dorset an easy choice for your investment

Portland Port

Portland Port Land Estate is home to a diverse range of maritime businesses attracted by the proximity of the land to the berths and anchorages of the harbour.

It is a safe and unique location within the English Channel providing excellent all-round protection with its superb natural shelter and break water. The Harbour is within easy access of the main shipping lanes 24 hours a day 7 days a week.

Portland Port already host tenants with fishery related interests but offers more opportunities for land-based aquaculture subject to obtaining the necessary consents.

Portland gives excellent sea water quality and temperature for land-based fish farms, to provide excellent fish growth of marketable quality.

Of particular interest is an area land circa. 5000m² which has in the past had planning permission for a fish farm (Ref WP/14/01033/OUT and WP/16/00150/RES).

Poole Harbour

A large natural harbour, the largest in Europe and second largest in the world, with the town of Poole on its shores.

Under the Poole Fishery Order 2015 and associated Management Plan there are a number of defined lease beds on the seabed that the Southern IFCA lease from the Crown Estate.

In 2020, a number of these lease beds were reallocated in line with changes to the conservation designations in the Harbour. Beds are sub-leased from the Southern IFCA to nine stakeholders /companies. In line with the Authority's five-year Legislative Forecast there are plans to explore if there are any opportunities to expand the existing area assigned for aquaculture.

The main species currently farmed on these leased beds are mussels and pacific oysters; however, in the past, native oysters, clams and cockles have been farmed or cultivated. <u>Designated as world heritage site</u>: July 22, 1999.

Other areas identified as opportunities for investment

Osprey Quay

On shore development opportunities for innovation and small-scale Recirculating Aquaculture System (RAS) production

Lyme Bay

Fertile waters with great potential for large offshore shellfish culture in this area, trials could take place for different species and Sea trout could be cultivated in this area

5

Soft landing & local support

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

Partnerships supporting the aquaculture industry needs

Dorset LEP offers tailored soft landing packages for new investors including relocation support, commercial property searches (introduction to land and real estate agents), local economic intelligence provision and introductions to local sector networking groups. www.dorsetlep.co.uk

A wide range of funding and finance options for your investment are available. www.dorsetchamber.co.uk/business-support/finance-funding



Cefas' exceptional breadth of science and technology capability means they can offer investors a comprehensive range of services including research, advice and consultancy; laboratory services and analysis; modelling; surveys; and technology services. www.cefas.co.uk



Dorset provides unique sector expertise and support through the role of an Aquaculture Development Officer hosted by Dorset Coast Forum. The offices give industry support, offers advice on current funding opportunities and acts as a central point of contact for the industry across Dorset.

The Officer also works to deliver the key action points in the Dorset Mariculture Strategy (2020-2025), including developing the concept of an Aquaculture Innovation Centre.

www.dorsetcoast.com/projects/aquaculture
www.dorsetaquaculture.co.uk



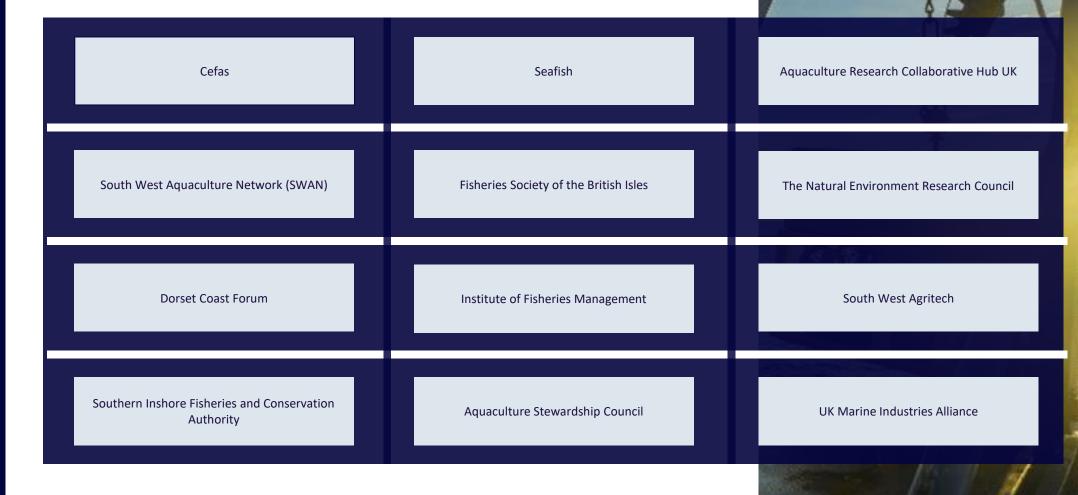
The Dorset Coast Forum is a strategic coastal partnership, which looks at the long term issues facing the Dorset coast and its inshore waters. The forum enables investors to discuss issues, gain access to the latest data and information, access support for the design and delivery of innovative projects, and network with key industry stakeholders. https://www.dorsetcoast.com



Government & Sector Support

Find comprehensive support and advice

The UK's industry bodies enable quick and easy access to suppliers, partners and customers









Real companies. Real experience. Real value.



Join companies who have demonstrated ongoing success in in Dorset and the South West region



Dorset Cleaner Fish

The Scottish salmon industry produces 170,000 t/yr of salmon in sea cages along the west coast of Scotland, and in Orkney and Shetland. Sea lice infestations weaken the salmon making them more susceptible to other diseases. The lice have become resistant to various chemical treatments, the residues of which also impact on the environment when released into the sea.

New biological methods of control include 'cleanerfish' (ballan wrasse and lumpfish) which cohabit with the salmon and feed on the lice.

Dorset Cleanerfish Ltd. a joint venture with the largest salmon farming company in the world, MOWI and a local company Native Marine Centre Ltd., has been producing lumpfish since 2013. With production units in Portland Port and Castletown, the company produces 750,000 fish per year.

Dorset Cleaner Fish	Othniel Oyster	Jurassic Sea Farms
Houghton Springs Farm	Offshore Shellfish	



Othniel Oysters

Othniel Oysters Ltd (OOL) leases 51 hectares of shellfish beds in Poole Harbour to farm Pacific oysters. Small, hatchery produced seed are reared in the floating nursery system to 10 grams and once laid on the sea bed take approximately 9 months to reach harvest size.

OOL operates from a 30 x 15 metre, 400 ton flat-bottomed barge, moored in the shelter of Brownsea Island, providing 300sq metres of covered working space with workshop facilities for repairs and maintenance of boats and gear.

Growers across the world visit to see the innovative harvesting technology using conveyor harvesting barges. Up to 3 million oysters are harvested per year, circa 400 tons, with 30% sold either locally or in the wider UK market. The rest are sold in the Far East, with Hong Kong and China as the main destinations.

Dorset Cleaner Fish	Othniel Oyster	Jurassic Sea Farms
Houghton Springs Farm	Offshore Shellfish	



Jurassic Sea Farms

There has been enormous interest in the culture of seaweeds recently not only in connection with its 'super food' reputation, but also its potential use in the cosmetics, health food, pharmaceutical, biofuels and fertiliser industries.

Jurassic Sea Farms Limited is exploiting this exciting opportunity with an initial project in Portland Port which will grow both seaweed and shellfish species such as oysters and scallops. The initial investors include several local partners with relevant expertise to make a success of the operation. Future expansion of the business will either be inside the Port or at a new site in the area.

Cefas are working with Jurassic Sea Farms to analyse the sugar kelp biomass produced in Portland Harbour to investigate the physiology, histology and chemical composition. This will provide baseline data to inform regulation for the emerging seaweed aquaculture industry in the UK; and demonstrate methodologies and knowledge gaps to inform future research

Dorset Cleaner Fish	Othniel Oyster	Jurassic Sea Farms
Houghton Springs Farm	Offshore Shellfish	



Houghton Springs Fish Farms

Originally established as a mixed farm for restoking both rainbows and brownies, presently, it is geared to facilitate genetic selection of the Houghton, enhanced growth Rainbow strain in tandem with the only Arctic Charr production in England, ultimately destined for either the sporting or table market.

The farm now holds in excess of 22 tons of Charr from eggs to 4 kg in size which in effect converts into the availability of 500 kg a week or +1000 fish at 500 gm.

The hatching and early rearing is carried out on borehole water; in the case of the Charr on water chilled to below 6C for two months, for faster growth and sustainable water usage.

Houghton Springs Fish Farm is a member of British Trout Association and an audited member of Quality Trout UK as well as Global G.A.P.

Dorset Cleaner Fish	Othniel Oyster	Jurassic Sea Farms
Houghton Springs Farm	Offshore Shellfish	



Offshore Shellfish

Offshore Shellfish Ltd. are developing the UK's first large-scale offshore rope cultured mussel farm.

Following successful pilot trials the farm is currently being expanded to its full permitted area. The development will eventually be the largest of its type in European waters and will use specially designed technology to cultivate the native blue mussel, *Mytilus edulis*, on suspended ropes at three sites between 3 and 6 miles offshore in the fertile waters of Lyme Bay.

The three sites will cover a total area of 15.4 square km and produce up to 10,000 tonnes per year once fully developed. Advantages include space and improved water quality. There is also the potential for other shellfish species and seaweed cultivation.

Dorset Cleaner Fish	Othniel Oyster	Jurassic Sea Farms
Houghton Springs Farm	Offshore Shellfish	



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

Web

Email



Department for International Trade

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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