Great South West

CLEAN ENERGY POWERHOUSE

HOW THE GREAT SOUTH WEST IS POWERING UP A GREENER BRITAIN

CONTENTS

ENERGY AT SCALE

THE GREAT SOUTH WEST WILL BE THE UK'S CLEAN ENERGY POWERHOUSE. THIS PROSPECTUS SETS OUT THE MAJOR ENERGY GENERATION OPPORTUNITIES POWERING UP BRITAIN.

The Great South West has an exceptional array of large-scale energy generation projects, boasting over **1.6 GW of operational solar PV generation and 0.2 GW of onshore wind.** Energy generation at scale is crucial in Powering Up Britain, reaching net zero and consolidating the UK's position as a global leader in green energy.

THE GREAT SOUTH WEST COULD PROVIDE UP TO

11%

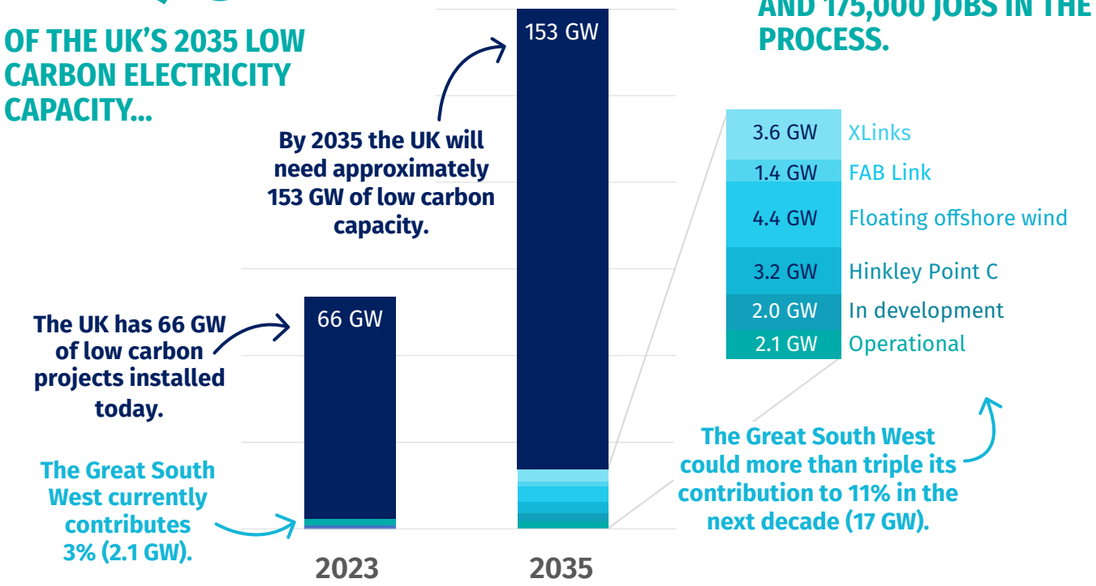
OF THE UK'S 2035 LOW CARBON ELECTRICITY CAPACITY...

Building on the legacy of Hinkley Point C, which will be the UK's largest low-carbon power station, the Great South West has proven itself to be the place to design, demonstrate and deploy innovative renewable technologies.

We are now focusing on the technologies of the future:

1. **Floating offshore wind** in the Celtic Sea
2. **Nuclear power** including Hinkley Point C
3. **Geothermal** heat and power solutions
4. **Hydrogen and green fuel** production
5. **Diverse low carbon solutions** including wave and tidal, onshore wind and solar, utility-scale heat and interconnectors.

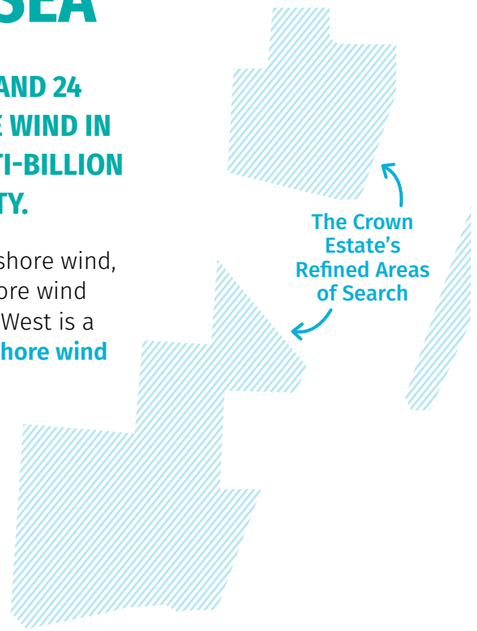
...AND COULD UNLOCK UP TO £10 BILLION OF GVA AND 175,000 JOBS IN THE PROCESS.



HARNESSING THE POWER OF THE CELTIC SEA

WITH A TARGET OF 4 GW BY 2035 AND 24 GW BY 2045, FLOATING OFFSHORE WIND IN THE CELTIC SEA PRESENTS A MULTI-BILLION POUND INVESTMENT OPPORTUNITY.

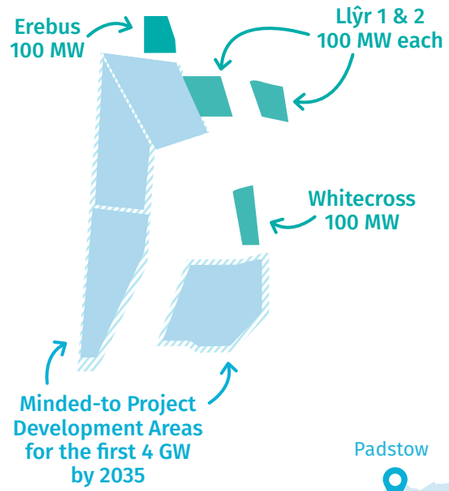
The Celtic Sea is the next frontier in offshore wind, offering some of the best floating offshore wind potential in the world. The Great South West is a **critical proving ground for floating offshore wind technologies,** combining our strengths in the maritime and environmental industries with our unique research facilities and the cluster of supply chain and tech firms active in the area.



DEMONSTRATION PROJECTS

The Great South West is supporting the development of TwinHub, the first floating offshore wind project to secure a Contract for Difference. The 32 MW project will use the former council-owned WaveHub site off Cornwall. Four 100 MW test and demonstration projects, capable of powering over 450,000 homes, are in development, including Whitecross off north Devon.

Artist's impression of the TwinHub floating platform



GIGAWATT SCALE DEVELOPMENT

The Celtic Sea will see 4 GW of additional floating offshore wind projects installed by 2035, with a further 20 GW targeted for development by 2045. The potential of the Celtic Sea has garnered significant interest from developers. Nearly 40 offshore wind developers are looking at projects for the first 4 GW, including major international energy and utility companies.

The first GW alone could deliver up to **3,000 jobs and £682 million in supply chain opportunities** for Wales and the South West, demonstrating the scale of possibilities for this new offshore region.

The TwinHub project will pave the way for larger-scale commercial floating projects in the South West, kick-starting the local supply chain development and investment.

Dan Benson, Bechtel

South West-based company, Sieche, completing underwater sound measurements

DRIVING INVESTMENT

The Celtic Sea presents **long-term, high-calibre opportunities** for allied investment in grid infrastructure, fabrication, operations and maintenance and offshore wind supply chains. Delivering these projects will draw on skills from across a range of sectors, including the existing maritime industries and those developed in the region as part of Hinkley Point C's construction.

POWER FOR THE FUTURE

With identified grid connection options in north Devon and Cornwall, **power from floating offshore wind will drive the low-carbon economy across the region.** This will help decarbonise energy-intensive industries, produce hydrogen, unlock the region's abundant mineral wealth, and enable the electrification of heat and transport.

FROM OUR UNIVERSITIES SPECIALISING IN RENEWABLE AND OFFSHORE ENERGY, TO OUR EXPERTISE IN MARINE AUTONOMY, THE GREAT SOUTH WEST WILL BE KEY TO SUPPORTING THE DELIVERY OF FLOATING OFFSHORE WIND.

OFFSHORE INNOVATION AND RESEARCH

The South West is **world-leading in "blue-tech" innovation,** having been awarded the High Potential Opportunity in Marine Autonomy. The UK's largest marine cluster highlights the emerging opportunity to design, test, validate and manufacture marine autonomous systems, which are in increasing demand in the offshore sector.

Through the **Supergen Offshore Renewable Energy Hub,** led by the University of Plymouth, the Great South West provides research leadership to the offshore sector, investing £9 million to date, with a further £4 million announced.

The **Cornwall Floating Offshore Wind Accelerator,** led by Celtic Sea Power, is pioneering decision-making for floating offshore wind development through the E^c simulator, believed to be the most sophisticated software tool currently available. Development in the Celtic Sea will also draw on the Great South West's historic marine industries, including shipbuilding and vessel servicing.

The University of Plymouth's COAST lab test facility

PORTS AND MARITIME CLUSTERS

A key advantage for the Great South West is the close proximity between the ports, the Celtic Sea development sites and established centres of research and industry. This creates a **highly efficient and low-cost environment** from which to commercialise and deploy new technology.

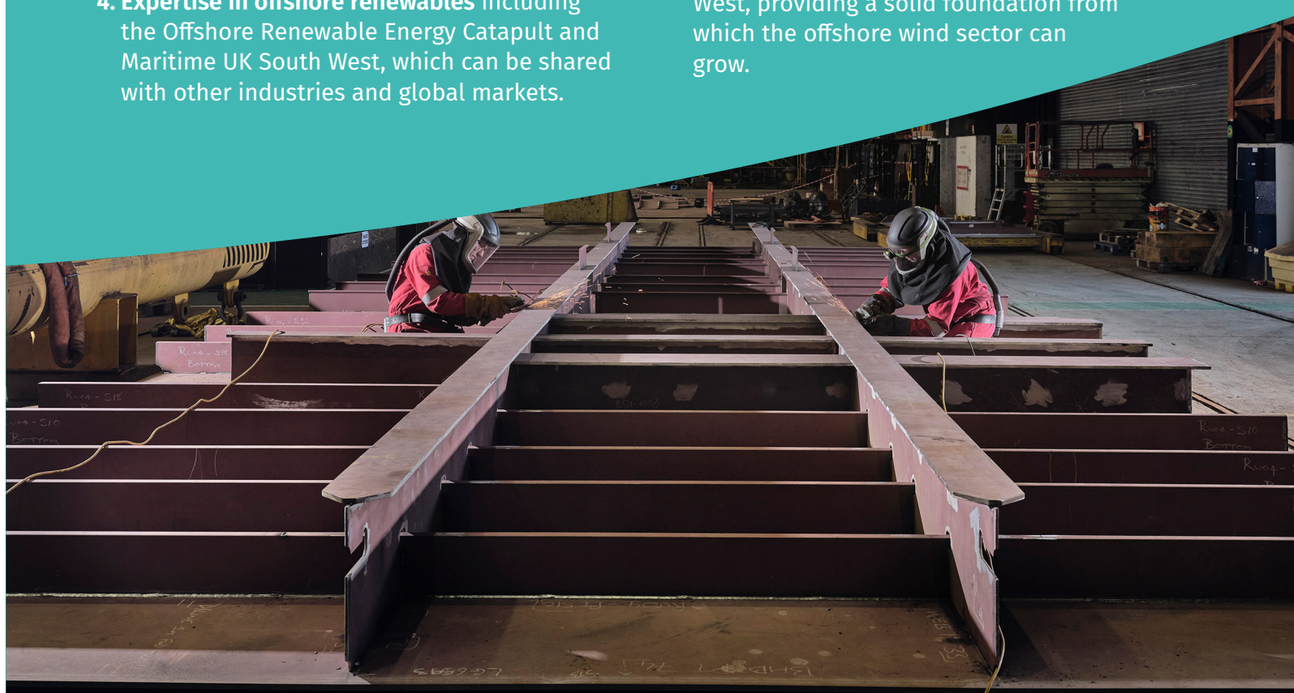
The Celtic Sea will require a multi-port approach, with several ports across the region needed to support different stages of project development:

- **Falmouth Port** has been earmarked to support the TwinHub project and is placed to become a deep-water logistics and fabrication hub for assembly processes, vessel servicing and ongoing operations and maintenance.
- **Appledore** has a long history in shipbuilding and marine engineering and its new relationship with Harland & Wolff will allow for a strategic offering to offshore wind developers. Through the **Clean Maritime Innovation Centre**, Appledore is at the forefront of low carbon vessel design for the c.1,400 new vessels that will be needed to service the UK floating offshore wind industry.
- **Plymouth and South Devon Freeport** is a designated area for marine innovation and blue-tech investment, acting as a catalyst for floating offshore wind development.
- **Portland Port** has the sheltered sea area and location to become a logistics hub for later floating offshore wind projects as well as the production of hydrogen.

THE GREAT SOUTH WEST OFFER

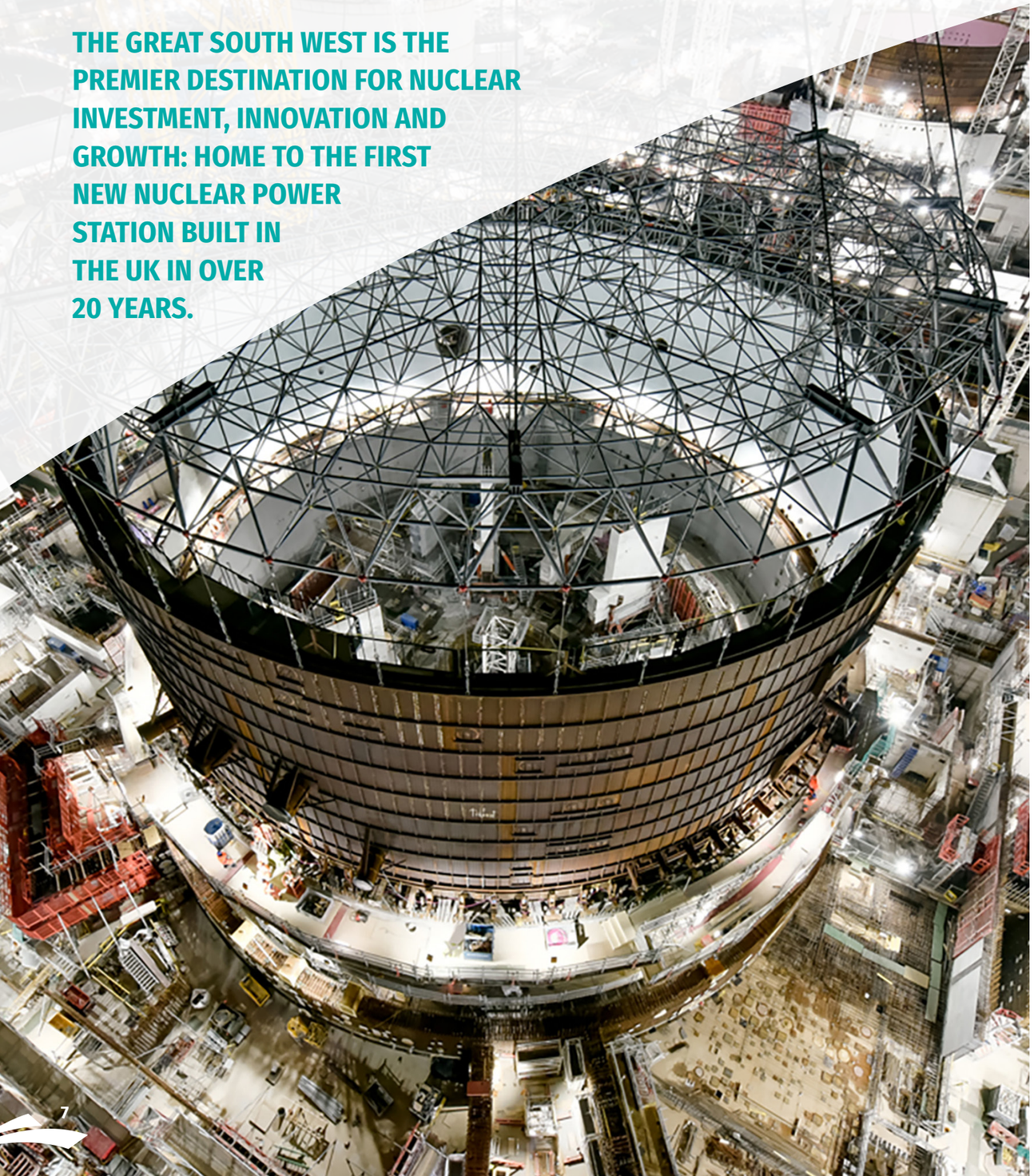
> ***"The South West is perfectly placed to advance the development of offshore renewable energy on behalf of the whole country.***
>
> Professor Deborah Greaves OBE, University of Plymouth

1. **State-of-the-art research facilities providing research leadership to the offshore sector,** including the University of Plymouth's world-class COAST lab and the University of Exeter's Falmouth Bay test site.
2. **Diverse mix of port facilities** across the region, with infrastructure available for marine engineering, shipbuilding and repair, manufacturing, installation, cargo handling and ongoing operations and maintenance.
3. **Strong political backing,** with MPs and councillors from across the region promoting the opportunities through the Celtic Sea APPG.
4. **Expertise in offshore renewables** including the Offshore Renewable Energy Catapult and Maritime UK South West, which can be shared with other industries and global markets.
5. **Extensive higher-level offshore wind skills,** established through specialist offshore renewable energy courses and professional development pathways, which are critical to the development of floating offshore wind.
6. **Over 7,000 high-value manufacturing businesses** across the Great South West, providing a solid foundation from which the offshore wind sector can grow.



Harland & Wolff's shipbuilding yard at Appledore

THE GREAT SOUTH WEST IS THE PREMIER DESTINATION FOR NUCLEAR INVESTMENT, INNOVATION AND GROWTH: HOME TO THE FIRST NEW NUCLEAR POWER STATION BUILT IN THE UK IN OVER 20 YEARS.



NUCLEAR POWER

THE BIGGEST AND MOST COMPLEX ENERGY ENGINEERING PROJECT IN THE UK IS BEING DELIVERED IN THE GREAT SOUTH WEST, CREATING A LEGACY OF SKILLS, EXPERTISE AND SUPPLY CHAIN CAPABILITY.

The Great South West has proven that it can support the construction of large-scale, mission-critical projects through Hinkley Point C, the first new nuclear power station to be built in the UK in over 20 years. Hinkley Point C has acted as a catalyst for regional growth and development, employing 22,000 skilled workers and 3,700 specialist businesses across the UK, with a third of the workforce being locally based.

NEW NUCLEAR AMBITIONS

Nuclear power is a key pillar of the government's net zero strategy, with an ambition for up to 24 GW of nuclear capacity by 2050. The Great South West will be integral in achieving this:

- When operational, Hinkley Point C will **power over 6 million homes** for the next 60 years.
- South West companies, with proven nuclear experience, will be key to delivering an expected £50 billion in **new build, decommissioning and defence** contracts over the next 20 years.
- The Great South West's **established nuclear supply chain,** through Hinkley Point C and our nuclear defence cluster, will create opportunities to support the development and construction of **Small Modular Reactors**.

£5.3 billion has been invested in South West companies as part of Hinkley Point C

THE GREAT SOUTH WEST OFFER

1. Home to **Hinkley Point C,** which will generate 3.2 GW of low carbon power, 7% of the UK's current demand.
2. Over **180 nuclear companies and organisations,** alongside Nuclear South West and the National College for Nuclear, positioning the Great South West as a centre of excellence in nuclear energy.
3. **Highly-skilled, locally-based workforce,** supported through the creation of three new **Centres of Excellence (Mechanical, Welding and Electrical)** as part of Hinkley Point C, equipped to deliver the next generation of net zero projects.
4. **£1.8 billion Nuclear Defence** programme at Devonport further establishing our nuclear expertise.

GEOTHERMAL AND TECH METALS

THE GREAT SOUTH WEST'S GEOTHERMAL AND GEO-RESOURCE POTENTIAL CAN GENERATE HEAT AND FLEXIBLE POWER, AS WELL AS HIGH-VALUE LITHIUM, TO SUPPORT THE COUNTRY'S NET ZERO TARGETS.

The Great South West is recognised as one of the best places to exploit the UK's potential for deep geothermal electricity and heat generation:

- **Cornwall and Devon's** hot granite spine brings geothermal resources much closer to the surface than anywhere else in the UK.
- **Dorset and South Devon's** Sherwood Sandstone geological formations stretch along the coastline and can provide zero carbon heating.

Geothermal can also help reduce the risks associated with rising energy prices by heating commercial and industrial properties, including agricultural glasshouses and tourist attractions. Due to come online in 2024, the **United Downs Deep Geothermal Power Project** could potentially decarbonise one of the region's biggest hospitals and 3,800 homes in Langarth Garden Village.

United Downs Deep Geothermal final testing phase

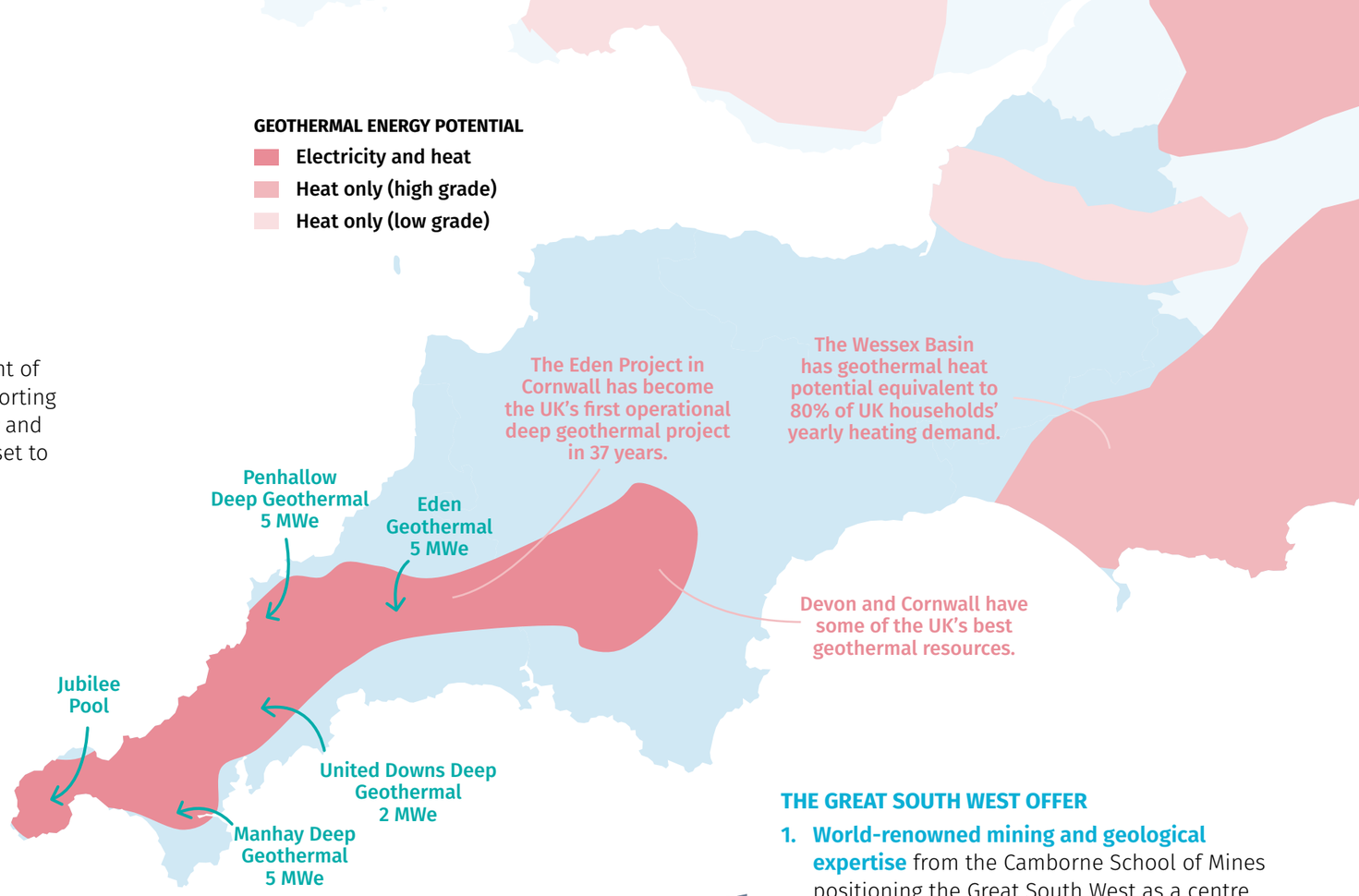
LITHIUM & TECH-METAL INDUSTRIES

Lithium extraction will be a key component of the Great South West's green future, supporting the government's Critical Mineral Strategy and supplying the European market, which is set to increase sevenfold by 2030.

Exploration has uncovered **significant concentrations of lithium** within the deep geothermal fluid at United Downs and other sites, while British Lithium has successfully produced the first battery-grade lithium from Cornish granite. Through planned projects alone, the region could provide c.40,000 tonnes of lithium a year.

The United Downs project has proved that geothermal energy can produce baseload electricity in the UK. We are now looking forward to expanding Cornwall's geothermal energy production to help secure stable energy costs and green jobs to strengthen the economy.

Ryan Law, Geothermal Engineering Limited



Cornish Lithium Reverse Circulation Rig at Trelavour, near St Austell

THE GREAT SOUTH WEST OFFER

1. **World-renowned mining and geological expertise** from the Camborne School of Mines positioning the Great South West as a centre of excellence in geothermal.
2. A unique concentration of **innovative businesses, organisations and experienced professionals** providing geological and geo-engineering services around the world.
3. **Combination of mineral resource and innovative technology** to develop the UK's first integrated producer of battery-grade lithium carbonate for electric vehicles.
4. **Early-mover advantage on a domestic supply of sustainably recovered lithium,** supported by advanced plans to locate a battery gigafactory at the Gravity site in Somerset.

HYDROGEN AND GREEN FUELS

THE GREAT SOUTH WEST CAN SUPPORT THE GOVERNMENT'S AMBITION TO PRODUCE GREEN HYDROGEN AND OTHER LOW CARBON FUELS AT SCALE, UNLOCKING £11 BILLION IN PRIVATE INVESTMENT AND SUPPORTING 12,000 JOBS ACROSS THE UK.

AQUACULTURE FOR BIOENERGY

With an estimated **9% annual growth rate in the seaweed cultivation industry** and a global market set to be worth £139 billion, aquaculture is a key energy growth sector.

The Great South West is perfectly positioned to exploit these opportunities, owing to the region's aquaculture-friendly coastline and extensive experience across marine and freshwater cultivation and conservation. The South West Aquaculture Network aims to develop cross-sector collaborative projects focusing on this viable and scalable source of biofuel, with key initiatives including an Aquaculture Innovation Centre in Dorset.

BIOFUELS

The capture and utilisation of fugitive biomethane can decarbonise agriculture and act as a low carbon fuel, with the potential to save over 4.5 million tCO_2e a year in the Great South West. Dairy and cattle farms across Cornwall alone could produce **biomethane equivalent to a third of their current natural gas demand.**

The captured biomethane can be easily stored and transported for use across the energy system, and the Great South West is at the forefront of creating new biofuels markets and supply chains in place of traditional fossil fuels. The Great South West is at the forefront of creating new biofuels markets and supply chains, working with New Holland to develop new methane-powered equipment to enable energy-independent farming.

Jurassic Sea Farms is trialing cultivation of seaweed in Portland Port

Utilising waste and biomass to produce fuel for electrical power generation, heat provision and fuelling vehicles is now the basis of a future in which farmers can maximise productivity while reducing their carbon footprint and establishing energy independence.

Dr Chris Mann, Bennamann

HYDROGEN

There is a significant opportunity in the Great South West to deliver end-to-end hydrogen solutions. Using the **vast renewable energy resources across the region,** from floating offshore wind to nuclear power, the Great South West could produce green hydrogen at scale, for use across key sectors including agriculture, aviation and aerospace and maritime.

Hydrogen could also be used to produce synthetic fuels, which can act as "drop-in" solutions for transport and aviation, reducing the need to replace existing fleets. As a **world leader in Smart and Sustainable Aviation** and the **UK's largest aerospace cluster,** the South West has the research and innovation capability to lead the development of this growing global market, estimated to be worth £10.8 billion.

Across the region, hydrogen clusters are being established. As part of the Plymouth and South Devon Freeport, Langage Green Hydrogen will provide hydrogen to two international mining companies. Imerys and Sibelco will use the hydrogen to decarbonise their clay mining operations.

In Dorset, Canford Renewable Energy has received £3 million to support the decarbonisation of heavy transport. In north Devon, the focus is on zero emissions boats, targeting the European offshore wind support vessel market, set to be worth £26 billion by 2050.

THE GREAT SOUTH WEST OFFER

1. Floating offshore wind, nuclear and other low carbon projects present an opportunity to **produce green hydrogen or synthetic fuels at scale.**
2. One of only three sizeable potential **hydrogen salt cavern storage areas** in the UK at Portland Port in Dorset, with plans to increase the UK's storage capacity by 70% by 2028.
3. **End-to-end hydrogen solutions** for floating offshore wind supply chains, including zero-emissions vessels, which are estimated to deliver £1.2 billion to the South West economy by 2050.
4. **Established centres for low carbon marine propulsion research and innovation,** including Centre for Future Clean Mobility and the Hydrogen Boat Centre.
5. **Ready-to-go biofuels industry,** capturing biomethane from farms for use in heavy vehicles and to replace natural gas.
6. **"High Potential Opportunity" in Sustainable Aquaculture** in Dorset, due to its rich natural assets and dynamic business environment.

A DIVERSE MIX OF LOW CARBON SOLUTIONS

A RESILIENT AND NET ZERO ENERGY SYSTEM WILL REQUIRE THE ROLLOUT OF BOTH LARGE-SCALE AND SMALL-SCALE RENEWABLE TECHNOLOGIES.

SOLAR, ONSHORE WIND AND STORAGE

The Great South West boasts the best solar resource in the UK and some of the best wind resource in Western Europe. Now 30 years on from developing the UK's first commercial onshore wind farm, we are continuing to pioneer clean energy, including essential battery storage projects.

Across the Great South West, there is 740 MW of battery storage projects and 1.2 GW of solar projects in development.

HEAT AT UTILITY SCALE

The Great South West is at the forefront of innovative solutions for the decarbonisation of heat. Kensa Utilities' Heat the Streets project has supported progressive and innovative developers to install utility-scale heat solutions for both public and private buildings.

The street-by-street retrofit is demonstrating a cost-effective way to achieve the UK's net zero targets for heating existing housing stock, while a Somerset-based housing association is leading the UK's largest-ever heat pump retrofit project.

20 MW Hawkers Hill battery storage facility in Dorset.

INTERCONNECTORS

Two proposed interconnectors, Xlinks and FAB Link, are looking to connect into the Great South West. The Xlinks project would connect exclusively to a solar, wind and battery facility in Morocco. FAB Link, between France and the UK, has been recognised as a "Project of Common Interest" by the EU following support from both the French and UK government. These interconnectors will not only provide key services to the UK's energy system but also create wider benefits by stimulating economic activity across the Great South West.

WAVE AND TIDAL

At the heart of the Great South West are our significant wave, wind and tidal resources. We have been working at the forefront of offshore renewables for many years.

The close proximity of resources and infrastructure, together with a strong offshore renewable industries and research base, creates a unique environment to accelerate the commercialisation and industrial development of these exciting new technologies.

"The Great South West has the scale and commitment to attract investors, and the talent to make progress across our green energy strengths.

Cecilia Bufton,
Dorset LEP

THE GREAT SOUTH WEST OFFER

1. **Some of the UK's best solar, wind, wave and tidal resource,** coupled with extensive experience in delivering renewable projects makes the Great South West a leader in green energy.
2. **Expertise in offshore renewables,** including the Offshore Renewable Energy Catapult, which led the international Tidal Stream Industry Energiser (TIGER) project from their regional office in Hayle.
3. Cutting edge research organisations and universities allow us to provide a 'Technology Pathway' to support the development of **new technology from concept design, prototype and component testing through to full scale demonstration**.
4. Centre for **heat pump manufacturing** and deployment of **innovative heat solutions,** which can be scaled-up and used across the UK.
5. **Two proposed interconnectors,** totalling 5 GW of renewable electricity imports, will support the UK's energy security and support local jobs and businesses.

Carland Cross windfarm

POWERING UP BRITAIN

THE GREAT SOUTH WEST IS A CLEAN ENERGY POWERHOUSE THAT IS SUPPORTING THE UK'S NET ZERO TARGETS.

30 years ago, the UK's first commercial onshore wind farm was developed in the Great South West. Now, faced with the scale of change required to meet net zero, we are at the forefront of pioneering clean energy.

The Great South West could contribute up to 11% of the UK's 2035 low carbon electricity capacity. This prospectus sets out the major energy generation opportunities across the region that will be key to Powering Up Britain:

1. **Floating offshore wind** in the Celtic Sea, a multi-billion pound investment opportunity with targets to deliver 24 GW by 2045.
2. **Nuclear power** including Hinkley Point C, the largest single infrastructure project in Europe, delivered in the Great South West.
3. **Geothermal** heat and power solutions, including lithium extraction from geothermal waters and hard granite rock, for use in battery manufacturing.
4. **Hydrogen and green fuel** production to decarbonise key Great South West sectors including agriculture, aviation and maritime.
5. **Diverse low carbon solutions** including wave and tidal, onshore wind and solar, utility-scale heat and interconnectors, supporting the UK's energy security.

Alongside the Great South West's natural resources, we have the groundbreaking companies, research institutes, people and skills to make the Great South West the best location to design, demonstrate and deploy innovative low carbon technologies.

From centres of excellence in nuclear, offshore renewables and geothermal, to High Potential Opportunity areas of marine autonomy, tech metals and aquaculture, the Great South West has the expertise and infrastructure to deliver the next generation of net zero projects and support the UK's clean energy ambitions.

THE GREAT SOUTH WEST IS A POWERFUL ALLIANCE COMMITTED TO WORKING WITH INDUSTRY AND GOVERNMENT TO DELIVER ON OUR CLEAN ENERGY OPPORTUNITIES AND LAUNCH AN ERA OF TRANSFORMATIONAL CHANGE.

UNLOCKING THE OPPORTUNITY

The Great South West will be the UK's clean energy powerhouse.

We have the energy generation opportunities, highly-skilled workforce and deep-rooted expertise to play a leading role in Powering Up Britain.

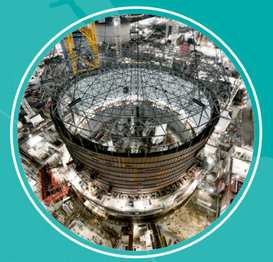
To unlock these opportunities, we need government action in three key areas.

REFORMED PLANNING AND LICENSING

Clearer policy landscape, with a greater focus on net zero, to help remove barriers for energy projects and infrastructure.

UNLOCKING INVESTMENT

Public and private investment to support early-stage innovation through to large-scale generation.



ELECTRICITY GRIDS FOR NET ZERO

Investment in our electricity grid to make it ready for net zero, and reform to reduce connection timescales.

1

REFORMED PLANNING AND LICENSING

Delays in the planning and consenting process, along with a lack of clear guidance, has stalled many projects or, in the case of onshore wind, whole sectors. We need urgent reforms to ensure low carbon developments can proceed without delay:

1. **ACCELERATE** the Celtic Sea leasing process, moving quickly to the build-out phase for 4 GW and setting plans for an expansion to at least 24 GW.
2. **WORK WITH** the Great South West to develop an integrated energy plan at a local, regional and national level that will deliver on the region's potential.
3. **AMEND** the National Planning Policy Framework to support onshore wind by removing footnote 54.
4. **SUPPORT** local planning authorities to develop supportive local policy and create local area energy plans.

2

UNLOCKING INVESTMENT

To deliver the exciting opportunities presented by net zero, significant investment is required from supporting early-stage technology innovation to financing large-scale transformational projects including ports:

1. **PROVIDE** dedicated CfD pots for key Great South West technologies, such as floating offshore wind, tidal stream and geothermal.
2. **TASK** the UK Infrastructure Bank to work with the Great South West to develop a portfolio of local projects.
3. **PROVIDE** investment cluster funding to optimise the innovation strengths of Great South West universities and businesses and support the region's transformational energy generation potential.
4. **RECOGNISE** the Great South West's energy opportunities when agreeing devolution deals and future regional investment.

3

ELECTRICITY GRIDS FOR NET ZERO

The Great South West could contribute 11% of the UK's 2035 low carbon electricity capacity, through gigawatts of new low carbon generation. However, long lead times of up to 15 years are delaying critical projects across the region. Investment in our electricity grid is needed urgently:

1. **DELIVER** a strategic and integrated approach to network investment for offshore, onshore and interconnector projects.
2. **SUPPORT AND ACT UPON** the UK Electricity Network Commissioner's recommendations.
3. **REFORM** the connections process to fast-track critical low carbon and socio-economic projects.
4. **BUILD** transmission capacity and upgrade key sub-stations across the region to support development in the Celtic Sea and across the Great South West.

Developing our low carbon energy assets is one of the fundamental priorities we face as a nation. The South West is already a leader in this field but, through floating offshore wind, hydrogen, geothermal and other opportunities, we will be going much further.

Karl Tucker,
Chair of the Great South West

Great South West

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