

THIS IS ENERGY & ENVIRONMENT

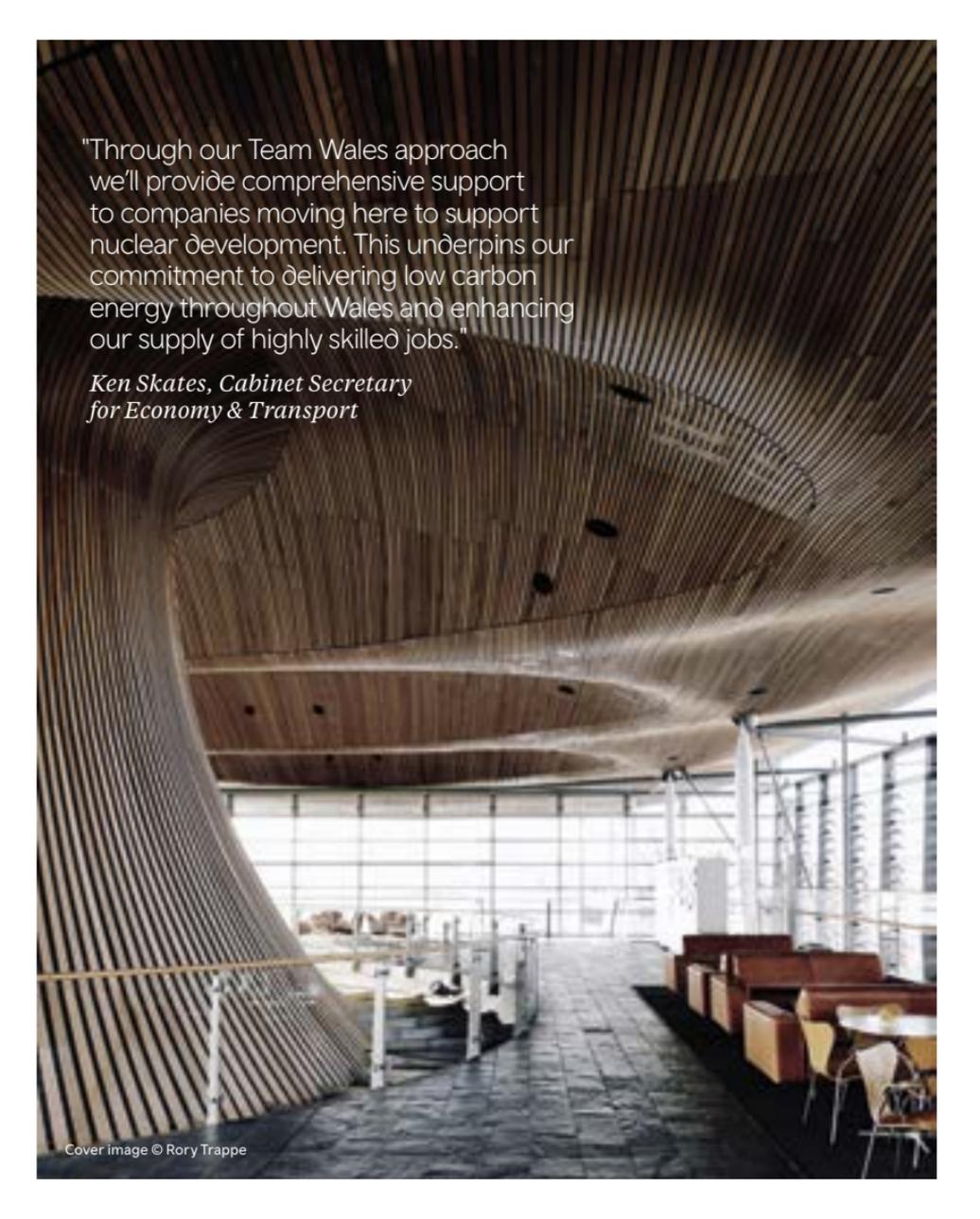
*North Wales Nuclear Arc*



NUCLEAR  
ARC



Cymru  
Wales



"Through our Team Wales approach we'll provide comprehensive support to companies moving here to support nuclear development. This underpins our commitment to delivering low carbon energy throughout Wales and enhancing our supply of highly skilled jobs."

*Ken Skates, Cabinet Secretary  
for Economy & Transport*

# T H I S I S W A L E S W E L C O M E

*As the UK further embraces nuclear energy, north Wales offers wide ranging opportunities for your business. These include supply chain opportunities within the development of new nuclear generation at Horizon's Wylfa Newydd, decommissioning of existing assets and potential future Small Modular Reactor (SMR) developments.*

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We have a long history of delivering safe nuclear energy to the rest of the UK. This has resulted in companies such as Magnox, Mott MacDonald and James Fisher Nuclear all operating in north Wales and servicing the wider nuclear sector.

North Wales is aligned with the UK's nuclear hub in the north of England and internationally via the 3 international airports at Liverpool, Manchester and Birmingham. We are working in partnership with UK Government to maximise the

economic potential of 'The UK's Nuclear Future' within the Industrial Strategy.

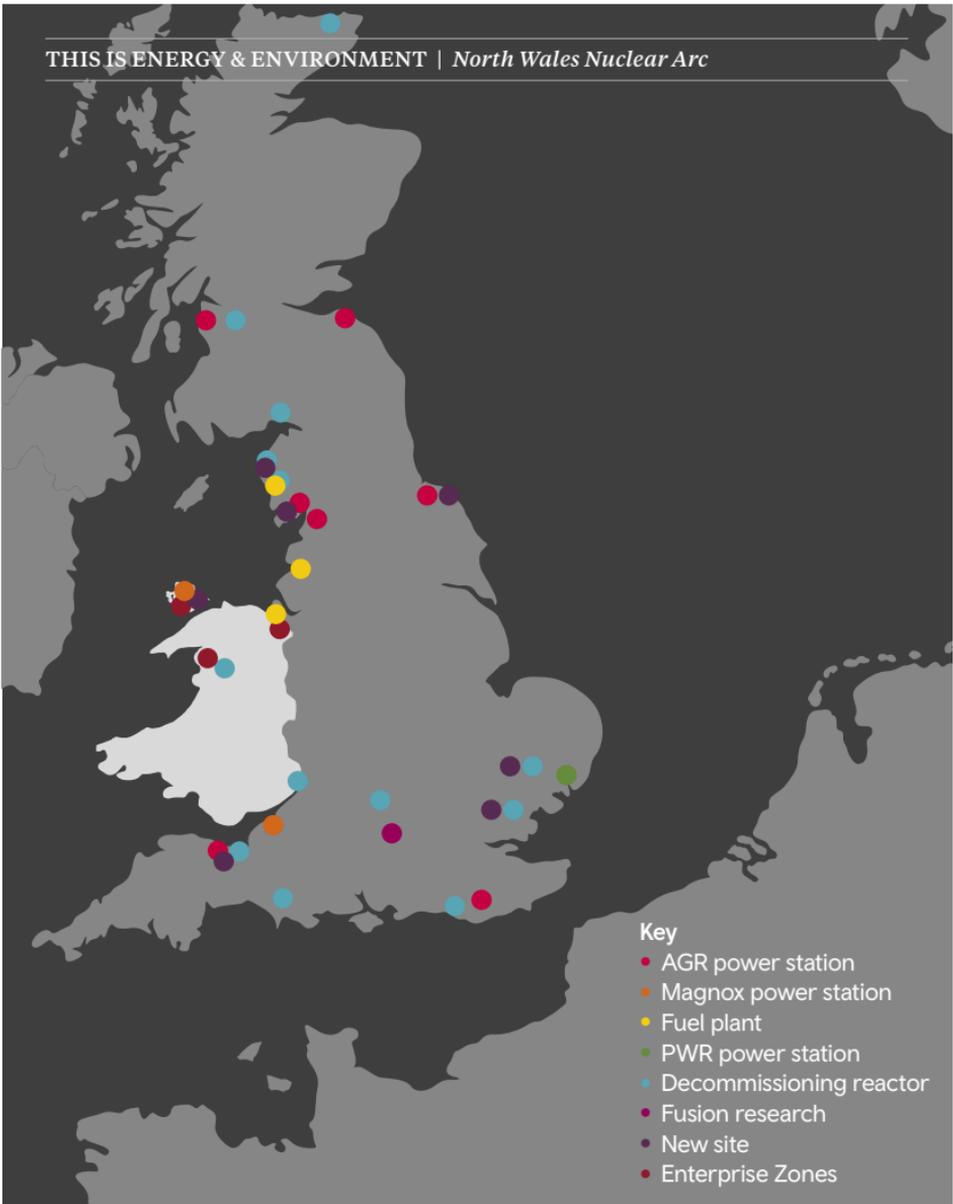
I believe that north Wales offers your business an excellent location to service the UK's growing nuclear sector and I and Team Wales look forward to working with you to achieve success.



A stylized, handwritten signature in black ink, appearing to read 'Ken Skates'.

**Ken Skates**  
Cabinet Secretary for Economy  
& Transport

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- Key
- AGR power station
  - Magnox power station
  - Fuel plant
  - PWR power station
  - Decommissioning reactor
  - Fusion research
  - New site
  - Enterprise Zones

# THIS IS NUCLEAR ENERGY

*We have a clear ambition in Wales, to create a sustainable, low carbon future.*

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Wales is situated on the western edge of the United Kingdom, and has a population of 3 million with direct access to over 60 million people within the rest of the UK. Crucially, we have access to a supportive devolved government, which has the ability to make things happen quickly.

The UK's National Infrastructure Plan (NIP) for 2016-21 highlights over £500 billion of planned public and private investments within 728

projects. Energy and environment related projects play an important part of this mix; with over 230 planned projects with an associated spend of £285 billion.

Wales is working in partnership with UK Government in delivering its Industrial Strategy 'The UK's Nuclear Future'.

Aligned with the UK NIP, we are working to deliver our North Wales Growth bid which will include major projects covering transport, skills, business innovation and R&D.

## U K N U C L E A R S E C T O R

*The future of nuclear energy in many countries is a matter of review and debate but here in the UK, support for new investment is strong.*

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The UK's Industrial Sector Strategy will be a key driver for growth, and Wales is working closely with UK Government to deliver maximum economic benefit for the nuclear sector.

The Nuclear Industry Association (NIA) estimates that the civil nuclear sector already provides high quality employment to over 65,000 people throughout the UK supply chain.

To build on this, UK Government selected 8 initial sites across the country to develop a new fleet of nuclear powered generation facilities, one of which is in north west Wales, which is anticipated to grow the sector by a further 25,000 people when the planned investments come on-stream.

Within the UK, north Wales and the north of England's Northern Powerhouse form the nucleus of the





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nuclear industry. The region provides an end-to-end solution for the sector from intellectual resources via our world renowned academic infrastructure and R&D centres, alongside our environmental engineering and construction capability, through to our long term experience of generating safe nuclear power.

As the UK is already home to a variety of nuclear projects, we are creating opportunities across all stages of the power generation lifecycle including EDF Energy's Hinkley Point C which is the first of the new projects to agree a strike price with UK Government, and have begun construction of their two UK-EPR nuclear reactors in the south west of England with an projected net generation of 3.2 GW.

This, in tandem with other planned energy infrastructure projects will underpin the UK's energy security for decades to come.

## N O R T H   W A L E S

*As previously highlighted, North Wales is an integral part of the UK's nuclear jigsaw and is seamlessly positioned alongside the Northern Powerhouse to provide access to the core of the country's highly skilled professionals and capability.*

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A recently successful proposal by Bangor University entitled the North West Nuclear Arc (an area from Sellafield to Trawsfynydd) has been selected to go forward in the 3rd round of the Science and Innovation Audits programme – this audit will add value to our vision around developing a nuclear arc of activity around the eastern side of the Irish Sea and should help identify areas of sector strength and opportunity across the Arc, including north Wales.

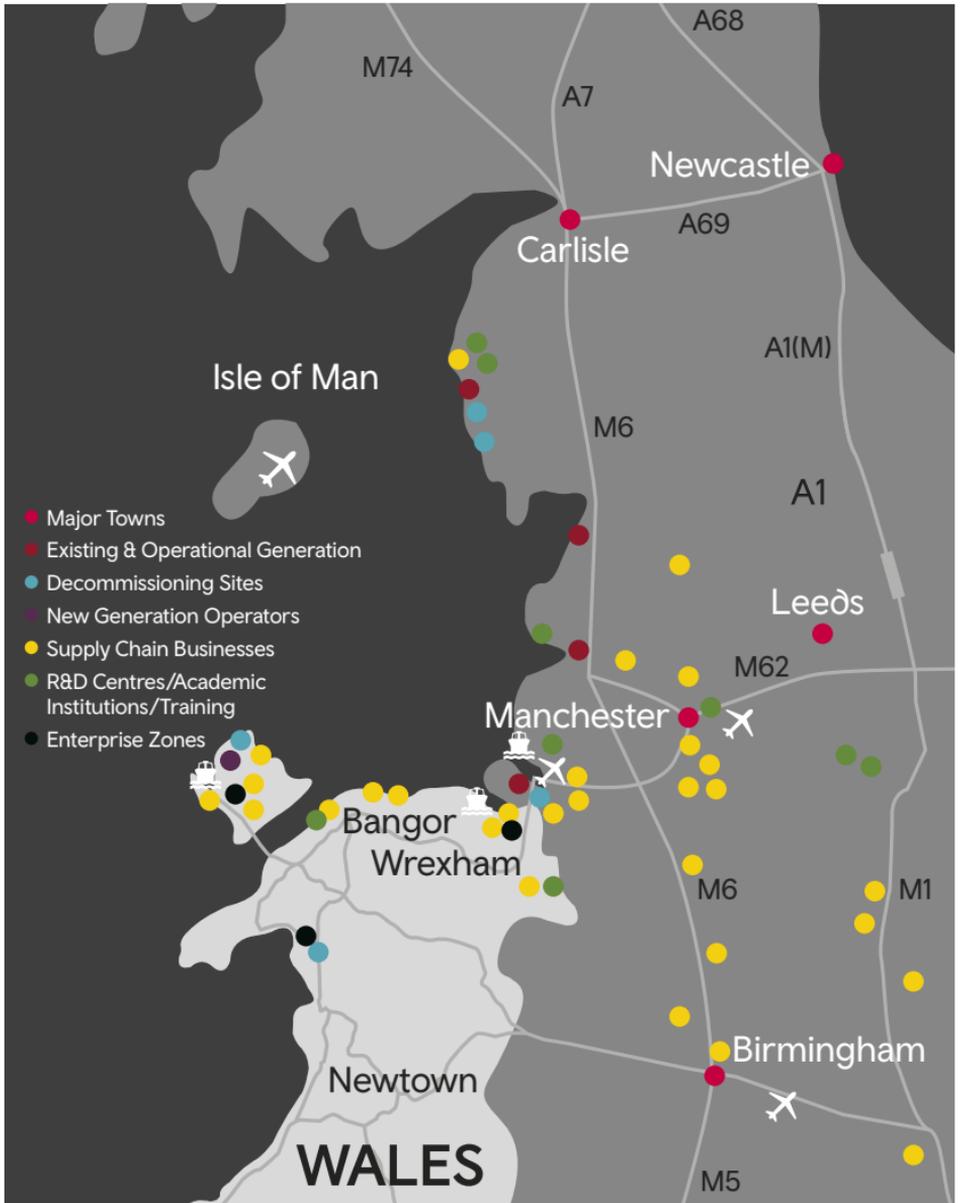
From new-build to decommissioning, suppliers are beginning to bid for a diverse range of short and long term contracts on new build projects, and operational support for operating plant and waste and decommissioning support across decommissioned sites.

There are around 1,200 people currently employed within the civil nuclear sector in north Wales and we have an extensive track record of delivering safe nuclear energy from our sites in Wylfa and Trawsfynydd. The 'lead and learn' principles applied to decommissioning at Trawsfynydd have already been, and continue to be extended to the other plants within the Magnox portfolio across the UK.

Hitachi is investing in a major new plant at Wylfa on Anglesey in north Wales, to be operated by Horizon Nuclear Power. The new £10 billion plant – Wylfa Newydd – is the first of two planned by Hitachi, the second at Oldbury-on-Severn, just across the Welsh border in Gloucestershire.

We have identified the following as being key future opportunities within the sector:

- Ongoing decommissioning across the UK fleet
- New build
- Small Modular Reactors (SMRs).
- Additional infrastructure investment projects covering energy, environment and transport.





# NEW BUILD

*Horizon Nuclear Power's £10 billion Wylfa Newydd project in north west Wales will have a net capacity of 2.7 GW and Horizon estimates that the facility will employ 850 people when operational, and up to 8,000 people during the construction process which will continue until the mid 2020s.*

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Progress is being made with all of its regulatory requirements – Horizon has recently submitted its application for a Nuclear Site License, the Development Consent Order application will be submitted in the near future and the Generic Design Assessment process is also due to complete before the end of 2017.

Horizon has also appointed a joint venture – Menter Newydd (which is a partnership between Hitachi Nuclear Energy Europe, Bechtel Management Company and JGC Corporation UK) – to manage the construction process.

Investment opportunities are wide ranging and encompass:

- A power station, including two nuclear reactors with a minimum generating capacity of 2.7 GW;
- A Marine Off-Loading Facility (MOLF);
- Cooling water intake and outfall structure;
- Electricity transmission infrastructure;
- Other associated buildings, such as administration offices, park and ride facilities, temporary worker accommodation, and at least one logistics centre;
- Interim waste and spent-fuel storage facilities;
- Access roads; and
- Measures and initiatives to manage any impacts during the construction and operation of a new power station.

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# DECOMMISSIONING

*Wales has a rich nuclear heritage extending back over 50 years to the opening of the Trawsfynydd magnox-fuelled station in 1965. Both the Trawsfynydd and Wylfa sites have now closed and are in the process of being decommissioned.*

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The Trawsfynydd station, located on a 15.4 hectare site on an inland lake in Snowdonia National Park is unique in being the only inland, lake cooled, civil Magnox nuclear station (2 x 235 MW reactors) in the UK. It generated 69 TWh of electricity over its 26 years of generation and permanently shut down in 1993. Decommissioning has been ongoing since 1995 and the station is expected to reach the care and maintenance stage by the late 2020s.

Wylfa, which is located on the north coast of the Isle of Anglesey, was commissioned in 1971 and was the last and largest of the magnox stations to be built (980 MWe). The station, which was the last generating magnox reactor in the UK, was shut down on 30 December 2015 after 44 years of successful and safe operation.

Defuelling is progressing well at Wylfa with an expectation that decommissioning will reach the care and maintenance stage by the mid to late 2020s.

Significant experience has been gained by companies from Wales in the decommissioning of the Trawsfynydd plant and more widely across the UK and globally. These companies have been involved in a number of complex and testing projects, more often than not, working with a number of large, global Tier 2 decommissioning contractors – e.g. Nuvia, Doosan Babcock. Experience has been gained in helping to address a wide variety of challenges including sludge and resin retrieval and removal, fuel element debris retrieval and the development of storage facilities for Intermediate Level Waste.

Your local workforce here includes technically skilled professionals, with Trawsfynydd able to access a highly skilled and experienced workforce and is within easy reach of a substantial advanced manufacturing hub across north Wales.

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# CASE STUDY : MONA LIFTING

*The Company has achieved a wide range of accreditations to support their growth including ISO 9001-15 and BS EN 1090 Welding fabrication of steel structures to execution Class 3.*

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Alongside this, they have also invested in their workforce, as their entire site personnel hold full CTC Security clearances and are Radiologically Classified Workers.

The Company has worked throughout the UK on various nuclear sites including Berkeley, Oldbury, Sellafield, Wylfa and Trawsfynydd.

Over the past several years, they have worked closely with Magnox on a variety of sites in Wales including Trawsfynydd and Wylfa. Mona Lifting has completed a number of complex projects including the design, manufacture and installation of a remote handling crane complete with

ancillary lifting equipment for the Secondary Dry Store Cell Intermediate Level Waste Recovery Project at Wylfa. The project commenced in 2015 and was completed in the Autumn of 2017.

As part of the process, Magnox personnel performed an extensive 6 month on-site trial using the remote handling crane. On completion, the crane was dismantled and transported to Wylfa. Mona Lifting then managed the challenging installation process which included all crane components being lifted 23m and passed through a floor opening of only 2m x 1.5m.

## M E N A I   S C I E N C E   P A R K

*Menai Science Park Ltd (M-SParc) is a wholly owned subsidiary of Bangor University, is developing a Science Park on Anglesey to drive growth in knowledge based science.*

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Work on what will be Wales' first dedicated Science Park is underway and will become operational by the Spring 2018.

The UK National Nuclear Thermal Hydraulic Facility at Menai Science Park on Anglesey, is a proposal to bring a £50 million major research and testing facility to North Wales that

has a legacy expectancy of up to 50 years. The Welsh Government has the opportunity to collaborate with UK Government to deliver the project as part of the UK's new nuclear research programme.

UK Government has awarded contracts for the first phase covering initial technical and research scoping and technical requirements of the Facility and, subject to a satisfactory outcome, the project will move to the design phase. It is intended that construction could start in mid 2019.



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# B U S I N E S S   S U P P O R T

*Introducing Enterprise Zones (EZ) – whatever your business, north Wales has an Enterprise Zone which will help you flourish.*

Whether you want to launch or grow your business, we've concentrated the best possible conditions for you to do just that in the 3 distinct Enterprise Zones across north Wales.

Some of the highest levels of grant aid in the UK from Welsh, UK and European sources (for Zones located in Tier 1 Areas) – terms and conditions apply.



## A N G L E S E Y

*With Tier 1 Area status ensuring some of the UK's highest levels of financial support, whatever your space requirements, the Zone has ten, wide ranging, well-connected sites at various stages of development.*

Join us here and your business could be met with opportunities to work alongside our major low carbon energy providers as part of the growing supply chain for major low carbon energy projects, both current and pipeline.

The workforce here is not just experienced and loyal but has strong skills and particular strengths in engineering and construction, playing its part in Welsh productivity levels that are higher than the UK average.



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## D E E S I D E

*At Deeside Enterprise Zone we have the highest concentration of manufacturing jobs in the UK. More of our people work in manufacturing than in any other field.*

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The zone is 2,000 hectares (4,942 acres), and you'll see a real diversity of sectors – from aerospace and automotive to electronics and pharmaceuticals to construction, food and sustainable energy. The one thing they all have in common is highly skilled, contemporary manufacturing.

You can expect a highly skilled talent pool born into a manufacturing tradition and developed through constantly evolving productive environments. And you can choose among a working population of over two million living within a 30 minute commute.

Birkenhead and Liverpool's docks and airport and Manchester Airport can all be reached in 35 minutes. The Port of Mostyn is also half-an-hour away, and it's just over an hour to the Port of Holyhead.

## S N O W D O N I A

*At the heart of the Snowdonia National Park, this EZ offers an unique site which provides an ideal environment for the growth of your nuclear related business.*

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The EZ has Tier 1 Area status ensuring some of the UK's highest levels of financial support are available here.

You'll find exceptional infrastructure at Trawsfynydd, our 50 hectare (123 acre) site around the former nuclear power station which offers first-of-its-kind Small Modular Reactor (SMR) development potential. The site isn't just home to one of Wales' largest lakes – a natural, low-cost source of cooling – but also has a direct connection to the National Grid.

Trawsfynydd is one of the preferred sites to develop the UK's proposed SMR programme.

Also, proposals are being brought forward under the UK's Industrial Strategy's Nuclear Sector deal which include the consideration of the sector's equipment qualification (EQ) requirements for its new build programme. The Nuclear Advanced Manufacturing Research Centre (NAMRC) along with Rolls-Royce, Lloyd's Register, Assystem and Arexis are involved. Should they conclude that a purpose-built EQ centre is required, north Wales and Trawsfynydd in particular could be an ideal location.

To underscore this potential, Trawsfynydd benefits from a technically skilled professional workforce who will become available as the nuclear plant is decommissioned.





## P O R T S

*North Wales has strategically located ports which provide valuable supply chain and deployment support for energy projects.*

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Ports in north Wales have reacted positively to maximise the market potential of energy and infrastructure projects. A prime example would be the Port of Mostyn that have made considerable capital investments and acted as a logistics hub to support the offshore wind energy sector which has enabled them to become RWE Innogy's preferred partner to service their three offshore wind farms in north Wales.

They also work closely with Airbus to transport their A380 wings, and to handle these shipments, a purpose-built low aircraft river craft and dedicated terminals and berths have been constructed at the Port and at Broughton. After discharge at Mostyn the wings are stored until they are loaded onto a sea-going Roll-on-Roll off vessel.

The Port has also developed a comprehensive supply chain infrastructure to support the projects, which could provide significant input into the proposed energy developments along the north Wales and north west of England coastline.

Holyhead Port is strategically located to support energy projects in north Wales including the nuclear sector and has actively worked alongside companies to develop solutions. The Port has recently completed a master planning exercise which incorporated a nuclear development option.

Aligned alongside our two north Wales port facilities, we also have speedy access to Cammell Laird at Birkenhead. The Port has considerable expertise within military ship refit, commercial ship repair, upgrade and conversion and shipbuilding and is developing a capability for building modules which can be transported to sites elsewhere in the UK.

## S U P P L Y   C H A I N

*Alongside our ports, our manufacturing and service base is striving to meet the industry's need for world class products and services.*

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Welsh Government is supporting Welsh companies through the Nuclear AMRC's Fit For Nuclear (F4N) programme which is a unique service that assists supply chain companies get ready to bid for contracts within the nuclear industry.

As part of the service F4N lets companies measure their operations against the standards required to supply the nuclear industry – in new build, operations and decommissioning – and identify the next steps to close any gaps.

Companies such as Flamgard, Lloyd Morris Electrical, AlMet and Mona Lifting in Wales have all received or are working towards their F4N status. Over 20 companies have either achieved or are working towards F4N status while funding is place to support a further cohort of 50 companies in 2017/18.

As a practical step to support the supply chain, the Welsh Nuclear Forum was established in 2016 to:-

- further understanding of how the wider nuclear agenda is evolving,
- to provide a platform from which to build Welsh business capabilities, through sharing information, market intelligence
- identify potential areas for collaborative effort

The Forum is now engaging regularly with over 100 companies and will eventually provide T1/2 contractors with a one-stop shop to the Welsh supply chain.

Wales offers a cradle-to-grave service solution including a thriving services sector ranging from Eversheds LLP and Hugh James solicitors, environmental and engineering companies such as ARUP and Mott MacDonald plus all the main construction contractors including Balfour Beatty and Kier Construction.



## A C A D E M I C   E X P E R T I S E

*Leading edge nuclear R&D programmes are underway in north Wales, addressing key industry issues including technology, training, supply chains, production and economics.*

Bangor University is a prime example. With both nuclear decommissioning and new-build projects on its doorstep, the University is building a world leading capability in nuclear engineering which will be the hub of a global network. With a focus on existing and emerging technologies in the nuclear sector including Pressurised Water Reactor (PWR), Boiling Water Reactor (BWR) and Small Modular Reactor (SMR), Bangor University will become a leading centre of expertise.

Already, Bangor University and Imperial College London, with Hitachi-GE providing technical expertise and support, have established a joint “BWR Research Hub and Network”. This BWR Research Hub and Network brings together the UK research base with Hitachi Nuclear researchers to help develop future generations of Boiling Water Reactor technology.





At a broader level, Bangor University is also developing a number of highly ambitious projects in the wider energy sector with a focus on sustainable and secure energy supplies for the future.

Professor David Shepherd, Deputy Vice-Chancellor of Bangor University said: "Together, these initiatives will establish north Wales as a global centre of expertise, and help develop a new generation of scientists and engineers to tackle the urgent need for energy security around the world."

Alongside our higher academic programmes Wales is working with Horizon Nuclear Power to provide 3 year technical apprenticeship opportunities via Coleg Menai in north west Wales.

Group Llandrillo Menai who is National Skills Academy for Nuclear's accredited local provider for delivering the Triple Bar qualification, which focuses on the basic principles of nuclear generation, health and safety and 'human behaviours', is an essential basic requirement for working on existing nuclear sites and allows the holder to access and work un-supervised on a nuclear facility.

Glyndŵr University in north Wales is a recognised training provider and is an HE Associate Member of the National Skills Academy for Nuclear.

## S U P P O R T   N E T W O R K

*Join us in Wales and your business could work with a number of support bodies.*

Our newly formed, industry led Wales Nuclear Forum has 100 plus members who are actively working towards supply chain collaboration and solution provision to the nuclear industry.

Construction Futures Wales is a joint initiative between the Construction Industry Training Board (CITB) and Welsh Government which offers support to Wales based construction businesses to grow and improve.

The Sell2Wales website is an information source and procurement portal set up by the Welsh Government which aims to help:

- The private sector promote their major contracts and develop their supply chain in Wales.
- Public sector buyers to advertise and manage tender opportunities.
- Businesses promote their services.
- Businesses find contract opportunities.

Further details can be found at [www.sell2wales.gov.wales](http://www.sell2wales.gov.wales)

BRE Wales is a multidisciplinary team providing sustainable building consultancy and research. Construction firms consult with BRE on diverse matters including refurbishment, renewable energy, site waste management and thermal modelling.



## WHAT NEXT?

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The opportunities for your sector in Wales are many and varied – so let's talk. Call one of our team to find out more about what Wales can do for your business.

Find out what Wales can do for your business:

UK—  
**+44 (0) 3000 6 03000**  
[tradeandinvest.wales](http://tradeandinvest.wales)

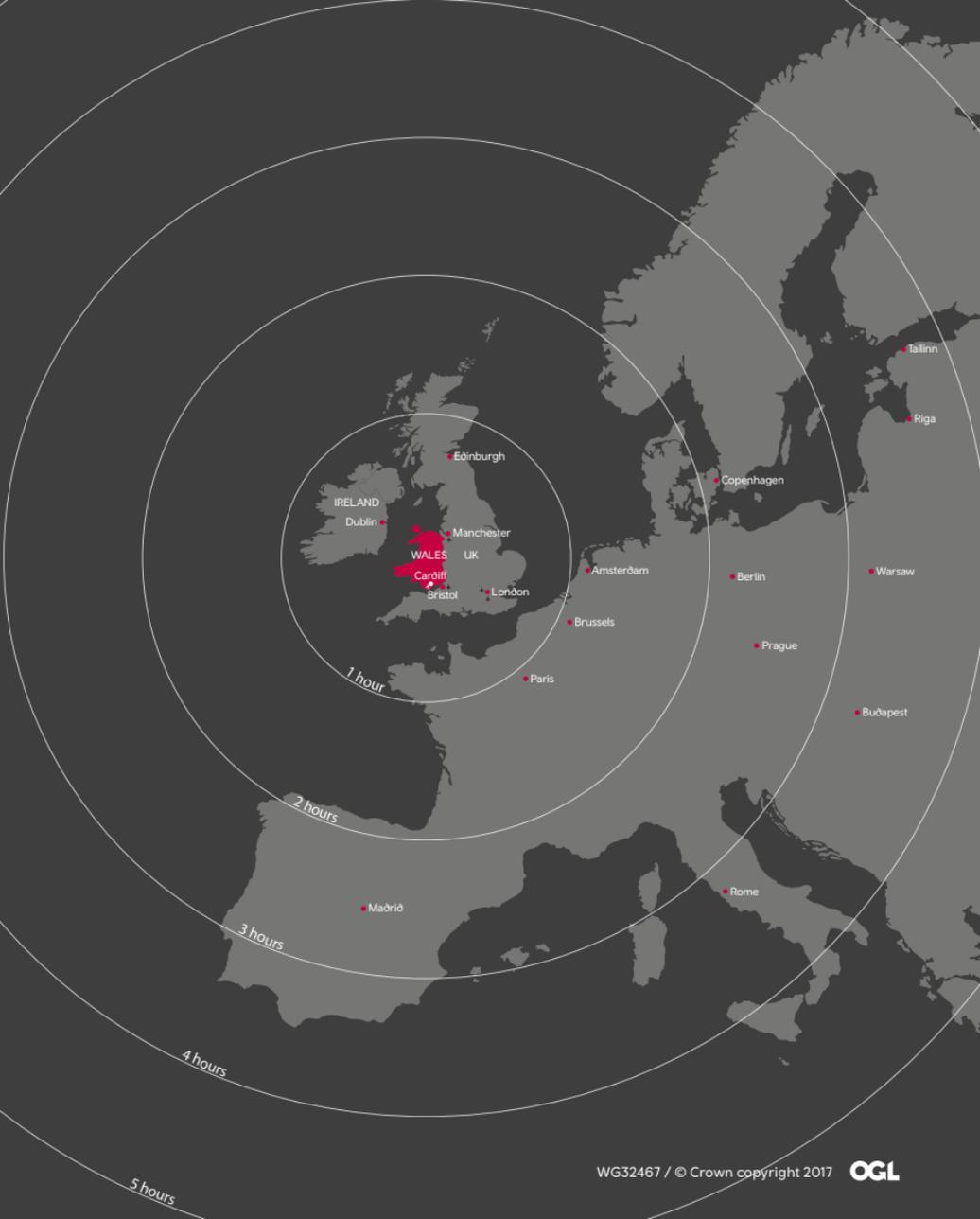
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*The Welsh Government has identified a number of distinct but interweaved opportunities supporting the future development of the sector including:*

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- New build.
- Research & Development.
- Ongoing decommissioning across the UK fleet.
- Planned infrastructure investment projects covering energy, environment and transport.
- Small Modular Reactors (SMRs).

Wales is entering an exciting era in the development of nuclear power – and businesses from the UK and overseas are invited to play a part.





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