

# INFRASTRUCTURE

Over £163m invested in port and harbour sites since 2010





Kishorn Port Ltd, Wester Ross

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## INFRASTRUCTURE

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# DEVELOPING A GLOBALLY COMPETITIVE RENEWABLE ENERGY INDUSTRY

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### OVERVIEW

Following years of strategic infrastructure investments within the Highlands and Islands, the region has developed into a vital base for the manufacture, construction and assembly of a range of energy assets, including offshore wind turbines and marine energy devices. In the development of a globally competitive renewable energy sector in Scotland, it is vital to ensure that a range of appropriate sites are available in the right locations to service this industry effectively. Suitable locations are also required to grasp the opportunity to develop operations and maintenance hubs for wind farms located in Scottish Waters.

With over £163m of public and private sector investments made in infrastructure sites across the Highlands and Islands since 2010; the region hosts a range of world-leading ports and harbours specifically geared towards the requirements of the renewable energy industry. Clear dividends are now being realised from these investments, with sites involved in globally significant offshore wind projects, such as the £2.6bn Beatrice Offshore Windfarm Ltd (BOWL) off the Caithness coast.

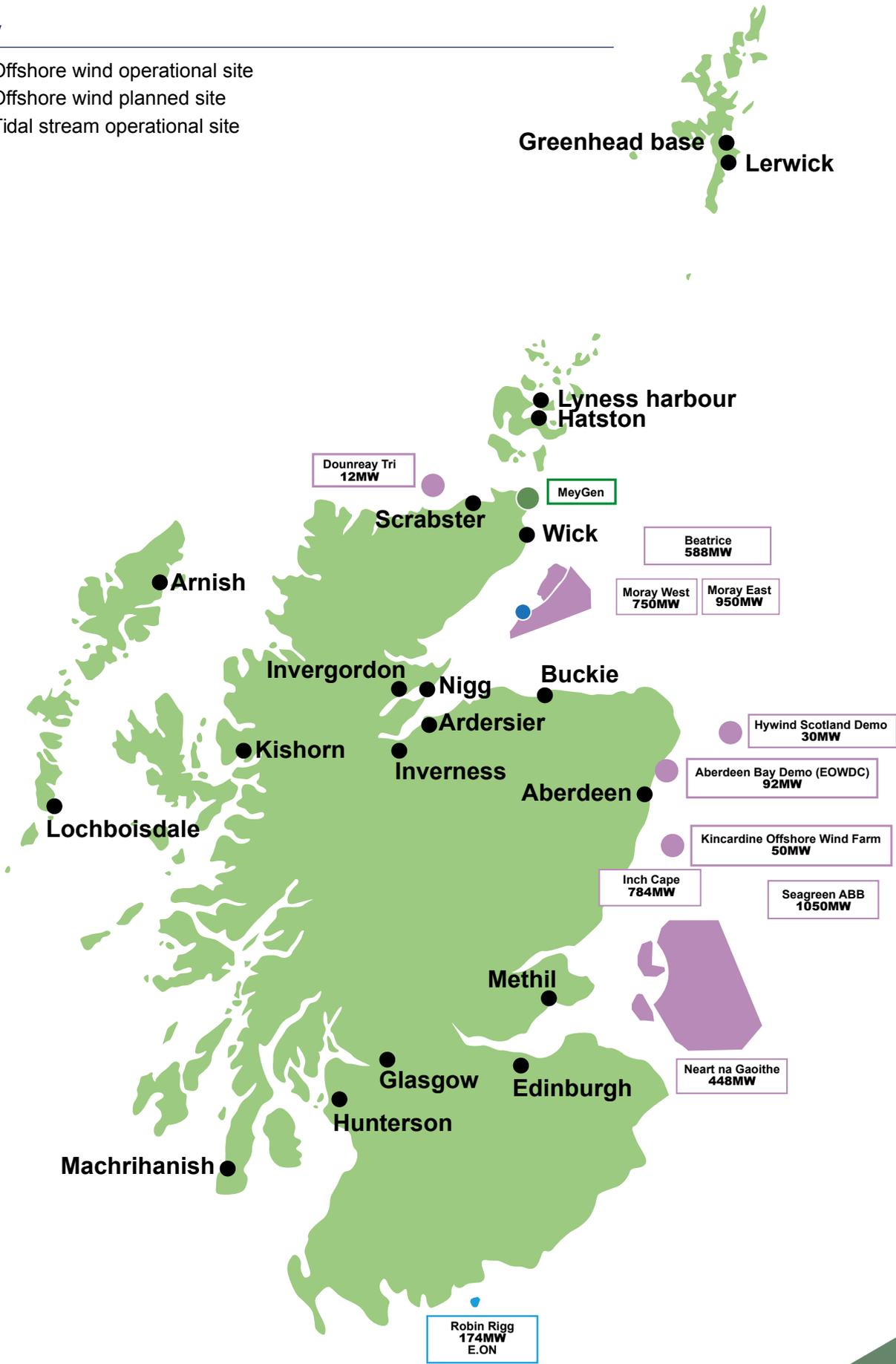
The marine energy sector remains a unique opportunity and key priority for the Highlands and Islands; with the European Marine Energy Centre (EMEC) the world's first and only grid connected and accredited testing facility for full-scale wave and tidal energy devices. EMEC is continuing the development of commercial-scale marine energy arrays in the Pentland Firth and Orkney Waters, utilising the unique and powerful natural marine resources in the area. The world-leading support stemming from EMEC has been crucial in the successful deployment of Atlantis Resources' 6MW MeyGen Phase 1A tidal array in the Pentland Firth and Scotrenewables Tidal Power 2MW SR2000 tidal turbine - the world's most powerful turbine of its kind.

Though the oil and gas sector has faced downturn globally and significant restructuring, the ports and harbours in the Highlands and Islands have been extremely resilient in adapting their offering to cover the growing demand for inspection, repair and maintenance of offshore assets. The legacy of oil and gas experience within the region lends itself to the increasing opportunities arising in the decommissioning of oil and gas structures - with Scotland's Onshore Decommissioning Centre of Excellence being established in Shetland.

# OFFSHORE RENEWABLE ACTIVITY - SCOTTISH WATERS

**Key**

- Offshore wind operational site
- Offshore wind planned site
- Tidal stream operational site



# HIGHLANDS AND ISLAND SITES OVERVIEW

## KISHORN

Located on the North-West coast of Scotland, Kishorn Port - incorporating the recently reinstated dry dock - is a unique infrastructure asset, ideal for the manufacture, assembly, fabrication, operation and maintenance of offshore wind assets, and oil and gas decommissioning. The site was previously used as a fabrication yard for oil and gas platforms, and in the late 1970s, the largest movable man-made structure in the world - the 600,000 tonne Ninian Oil Platform - was produced and floated out from the site. There is a quarry onsite capable of producing one million tonnes of aggregate, ideally suited for the production of concrete gravity base structures or concrete caissons. The world class dry dock facility - one of the largest in Europe - was reinstated in Q1 2017 with support from HIE, is approximately 160m in diameter with 13m water depth at high tide. Accompanying the unique infrastructure assets are 26 hectares of hard standing, substantial lay down areas and four deep water quays.

## ARDERSIER

The Port of Ardersier - owned by the CWC Group - sits 24km east of Inverness and has a principal area of around 270 acres which has been remediated and is ready for immediate development. This makes Ardersier one of the largest development areas of any port site in the UK. With a 1,000m quayside and a deep-water harbour, Ardersier has the potential to be one of the key assets for the delivery of renewable energy projects on the East coast of the UK, as well as for oil and gas decommissioning within the UKCS. The site was previously used for the fabrication of large-scale structures for the oil and gas industry in the North Sea, and employed over 4,500 people.

## ARNISH

Situated in the Outer Hebrides, Arnish is a strategic multi-use site which has investor ready plots and offers a manufacturing, assembly and deployment hub within the West of Scotland cluster, for both the offshore wind and oil and gas sectors.

The 48ha site, owned by the Stornoway Trust and leased to HIE, has benefitted from over £8m of investment from HIE for its phased redeveloped. These investments have resulted in the construction of a deep water, heavy lift pier with 3,000 tonne load-out capacity, flexible serviced plots and the development of significant laydown areas. The upgrades facilities at Arnish have recently been utilised for the fabrication of jacket substructures and piles for the Beatrice Offshore Wind Farm in the Moray Firth. With a history in oil and gas operations and expertise, operations at Arnish have successfully diversified into the offshore wind market and significantly increased their employment of locally skilled workforce.

The substantial steel rolling capacity, desirable location of Arnish and prime quayside access presents excellent opportunities within high-growth business sectors associated with marine engineering that can support future national and international investments in the renewable energy and oil & gas sectors, as well as the burgeoning decommissioning market.

## NIGG ENERGY PARK

Strategically placed at the northern entrance to the Cromarty Firth, this 237-acre site is unique in offering 24/7 access, at all states of wind and tide and has extensive deep water, sheltered anchorage, excellent dry dock facilities and diverse local supply chain capabilities. The site is owned by the Global Energy Group, who - with £6.5m of support from HIE - have transformed it into a modern, multi-user facility serving a range of energy sectors, including oil and gas and renewables. In recognition of the excellent facilities at Nigg Energy Park, the site has been selected as the construction and marshalling port for the BOWL project, with operations due to commence in 2018.

## MACHRIHANISH

In order to complement the expansion of CS Wind's world-class turbine manufacturing facility in Machrihanish, Campbeltown Harbour has undergone an extensive infrastructure upgrade. £12m was previously invested by Argyll & Bute Council to provide Campbeltown harbour with deep water berthing, improved access road and supporting quayside facilities onsite, which importantly permitted 'load-out' from the nearby CS Wind UK Factory - now also capable of producing offshore turbine tower sections.

The acquisition of Wind Towers Scotland by CS Wind UK, in conjunction with over £5m investments made by HIE, has created a site suitable for large scale manufacturing, fabrication and construction in the renewable energy sector.

## PORT OF CROMARTY FIRTH

Located within the sheltered Cromarty Firth, the Invergordon service base has established itself as one of the UK's premier port facilities for IRM (inspection, repair and maintenance) for the oil and gas sector. In 2014, £4m was invested by HIE into the port's Phase 3 development, creating a new deep-water quayside and bringing the total project investment to £25 million. The new quay is over 150m long with a maximum water depth of up to 14m, and has substantial accompanying laydown land available - making it an attractive site to both the oil and gas decommissioning and renewable energy sectors.

In Q1 2018, the site secured their first decommissioning contract from Bibby Offshore, for the dismantling of subsea infrastructure from Fairfield Energy's Greater Dunlin Area. With ever-increasing activity onsite, the Port of Cromarty Firth have recently confirmed Phase 4 plans for the creation of an additional £23m berth similar in scale to that built in 2015.



Port of Cromarty Firth

### GREENHEAD BASE / DALES VOE

£1.2m of strategic infrastructure investments made by HIE into Lerwick Harbour - incorporating both Greenhead Base and Dales Voe - has helped establish, 'Scotland's Onshore Decommissioning Centre of Excellence', which is poised to take advantage of this attractive multi-billion pound industry and upcoming project from the neighbouring North Sea. The sites offer multiple 100m+ quays, deep-water access and exceptional quayside load capacity of up to 60 tonnes per square metre.

In 2017, Dales Voe was selected by the decommissioning partnership of Veolia and Peterson for the dismantling and recycling of the Buchan Alpha oil production vessel, highlighting the premier facility which has been established in Shetland. Lerwick Harbour will continue to play a significant role in supporting the exploration, development and operation of Northern North Sea, West of Shetland and Atlantic Frontier oil and gas fields for future years.

### ORKNEY

For over a decade now, the infrastructure sites in Orkney have played a crucial role in the advancements made within the marine renewables sector, namely in wave and tidal energy. At the centre of this progression is EMEC - the European Marine Energy Centre. To support the trialling of technologies coming from EMEC, public and private sector organisations invested £20m to support Orkney's 'Three Port Strategy', which undertook the infrastructure redevelopments of Copland Dock (Stromness), Lyness Harbour (Hoy) and Hatston Terminal (Kirkwall). The investment has also led to exciting wider energy developments, such as the growing interest in using the upgraded Lyness facilities, on the shores of Scapa Flow, for oil and gas decommissioning which has received support from Scottish Governments' 'Decommissioning Challenge Fund'.

### SCRABSTER

As Scotland's most northerly mainland harbour, Scrabster was identified as a key site for marine energy developments in the Pentland Firth and Orkney Waters. As such HIE invested £7.9m to enable the harbour to develop into a key component of Scotland's wider renewable-energy infrastructure, while also supporting the site's on-going oil and gas activity. Scrabster is poised to take advantage of increased oil and gas exploration West of Shetland, offering excellent, flexible facilities and proximity to emerging sites.

### BUCKIE

On the southern shores of the Moray Firth, Buckie Harbour is an established commercial port with a proven track record and capable supply chain in supporting offshore renewable energy activity. The potential for this strategically located and user-ready facility to be involved in oil and gas decommissioning is being explored, with the sheltered harbour ideally situated to provide safe berthing for supply vessels and deliver a range of supporting services. With on-going assistance from HIE, the site has ambitions to take advantage of opportunities arising from pipeline renewable projects and has also been highlighted by a number of renewable developers, as a highly suitable location for O&M services.

### WICK

In June 2013, HIE invested over £240,000 into developments at Wick Harbour which most notably included the installation of the essential heavy lift pad at the commercial quay. Wick Harbour have secured the 25-year operations and maintenance contract for the SSE-led Beatrice Offshore Wind Farm Limited (BOWL) and have ambitious plans for the future, including securing further opportunities from pipeline renewable projects.



Artist's impression of the Beatrice Offshore Windfarm

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## INFRASTRUCTURE

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# BOWL CASE STUDY

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At £2.6bn, the SSE-led Beatrice Offshore Windfarm Ltd (BOWL) project is one of Scotland's largest private infrastructure investments and will be the world's deepest offshore wind farm. Once fully operational, BOWL will consist of 84 wind turbines located 13.5km off the Caithness coast - with the 588MW generating capacity estimated to provide power to approximately 450,000 homes. The project is expected to deliver £680m to the Scottish and UK economy during construction phase, and a further £400-£525m during the 25-year operational life.

Utilising the Nigg Energy Park, a contract has been agreed between Siemens and Global Energy Group, which will use the Cromarty Firth site for the construction and marshalling works. This multi-million pound contract will commence in the spring of 2018 and is expected to create up to 100 direct and indirect jobs, along with related supply chain opportunities. Investments of £10m have been committed to establish Wick Harbour as the O&M base for the 25-year operational lifetime of project, which includes employment opportunities, renovation of quayside buildings and construction of a bespoke O&M facility. Buckie Harbour has also now achieved contingency port status for this exciting offshore wind development.

Using their facilities at Arnish, BiFab have won two multi-million pound contracts with BOWL's Tier 1 suppliers Siemens and Seaway Heavy Lifting, for the manufacture of offshore jacket substructures and piles for the wind farm development. This contract award has resulted in significant benefits for the local island economy, and considerably increased the skilled-employment opportunities onsite. Installation of the piles will be completed by the heavy lift vessel, Stanislav Yudin, transporting the offshore assets from the Port of Cromarty Firth.

The fundamental contribution of these five port and harbour sites to this ground-breaking offshore wind scheme truly illustrate the confidence of key industry players in the infrastructure of the Highlands and Islands of Scotland.



Deployment of turbine for the MeyGen project

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# MEYGEN CASE STUDY

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Led by Atlantis Resources Ltd. the MeyGen tidal stream project, located in the Inner Sound in the Pentland Firth, has become the world's first utility scale grid-connected tidal array energy farm. The Phase 1a – a 6MW four turbine array - began generating electricity in November 2016, with more than 50 jobs and 40 local firms involved in the construction of this innovative scheme. The success of phase 1a is a global milestone for marine energy and marked the point where the industry moved from research and development, onto a clear route towards commercialisation and electricity generation.

Having initially begun testing of their prototype AR1000 tidal turbine at EMEC in 2011, the world-leading technology behind the Phase 1a array was founded in Orkney, with invaluable lessons learnt at the grid-connected test sites.

Phase 1a represents the first stage in the 398MW project to be deployed in the Highland waters over the next decade, and is expected to generate electricity to power up to 175,000 homes. The 4 x 1.5MW turbines - consisting of 1 x Atlantis Resources and 3 x Andritz Hydro devices - were assembled and launched from Nigg Energy Park, with Scrabster Harbour contracted for the on-going operation and maintenance of the marine assets. The valuable infrastructure role which Scrabster harbour will play in future marine energy developments was previously recognised by HIE, evidenced by investment of £7.9m to enable vital upgrades onsite.

In acknowledging the essential contribution which HIE has made in the MeyGen project achieving this global milestone, Tim Cornelius (CEO, Atlantis Resources) named one of the first tidal turbines, The Calum Davidson, after the late Calum Davidson - previous Director of Energy and Low Carbon at HIE.



Greenhead Base, Lerwick

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# INVESTMENTS

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HIE along with other public and private sector sources have invested over £163m into our infrastructure sites since 2010 to support the servicing of large scale developments within a range of energy sectors from oil and gas, subsea and decommissioning, to offshore wind, wave and tidal. This catalogue of strategic investments has established the region as a globally significant player in the energy sector.

Recent projects which have attracted funding from HIE include; the reinstating of Kishorn Dry Dock, establishment of an 'Onshore Decommissioning Centre of Excellence' in Lerwick, expansions at Port of Cromarty Firth, and significant upgrade works at Arnish and Nigg Energy Park. These works have been carried out to ensure that the ports and harbours in the Highlands and Islands area are fit for purpose, and able to offer attractive propositions to both inward investors and local businesses.

Our infrastructure sites - and supporting supply chain - have a legacy of experience in manufacturing and engineering projects, which has allowed the successful transition into emerging energy sector opportunities. Coupled with these fantastic capabilities, are unique natural resources to the Highlands and Islands - such as deep-water access and sheltered quayside facilities - which will offer full project lifecycle solutions for future energy projects in years to come.

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