



Unlimited opportunities in the East of England

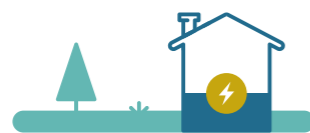
OFFSHORE WIND

Opportunities in the East of England





**OFFSHORE WIND
in the
EAST OF ENGLAND**



2022 32%

of UK homes powered by clean energy from the East of England*



2035 67%

of UK homes could be powered by clean energy from the East of England*

2022 8.7GW



of clean energy installed capacity in the East of England

2035 24GW



of clean energy installed capacity in the East of England

The East of England is one of the largest offshore wind development zones in Europe. Its favourable geography, excellent infrastructure and offshore energy and marine capabilities make it the perfect location for your offshore wind business to thrive.

With over 1000 turbines already installed and some of the world's largest projects consented and preparing for deployment, there's opportunities within the entire project lifecycle from construction to operations and maintenance to repowering and eventual decommissioning.

The Southern North Sea's (SNS) offshore wind farms are readily accessible from the energy focussed ports of Great Yarmouth and Lowestoft. Both have built significant expertise in the construction, operations and maintenance of offshore wind projects. Freeport status at the ports of Felixstowe and Harwich is set to further strengthen the East of England's clean-energy capabilities, providing new opportunities for investment to support the UK to achieve its clean growth ambitions.

The role of GENERATE, together with its key partner the East of England Energy Group (EEEGR) and and the region's offshore wind cluster group, East Wind is to ensure these unique assets, supply chain capabilities, skills and training providers and investment opportunities are promoted, marketed and on the radar of major international players and government at all levels.

For more details see: generate-energy.co.uk

“THE GROWTH OPPORTUNITIES ARISING FROM NEW AND EXISTING OFFSHORE WIND DEVELOPMENTS IN THE EAST OF ENGLAND ARE UNPARALLELED. WITH A DEDICATED OFFSHORE WIND SUPPLY CHAIN, A SKILLED ENERGY WORKFORCE AND A WIDE RANGE OF EXCITING ENERGY INFRASTRUCTURE PROJECTS IN PROGRESS, THERE HAS NEVER BEEN A BETTER TIME TO BUILD YOUR OFFSHORE WIND BUSINESS IN THE UK'S CLEAN GROWTH REGION.”



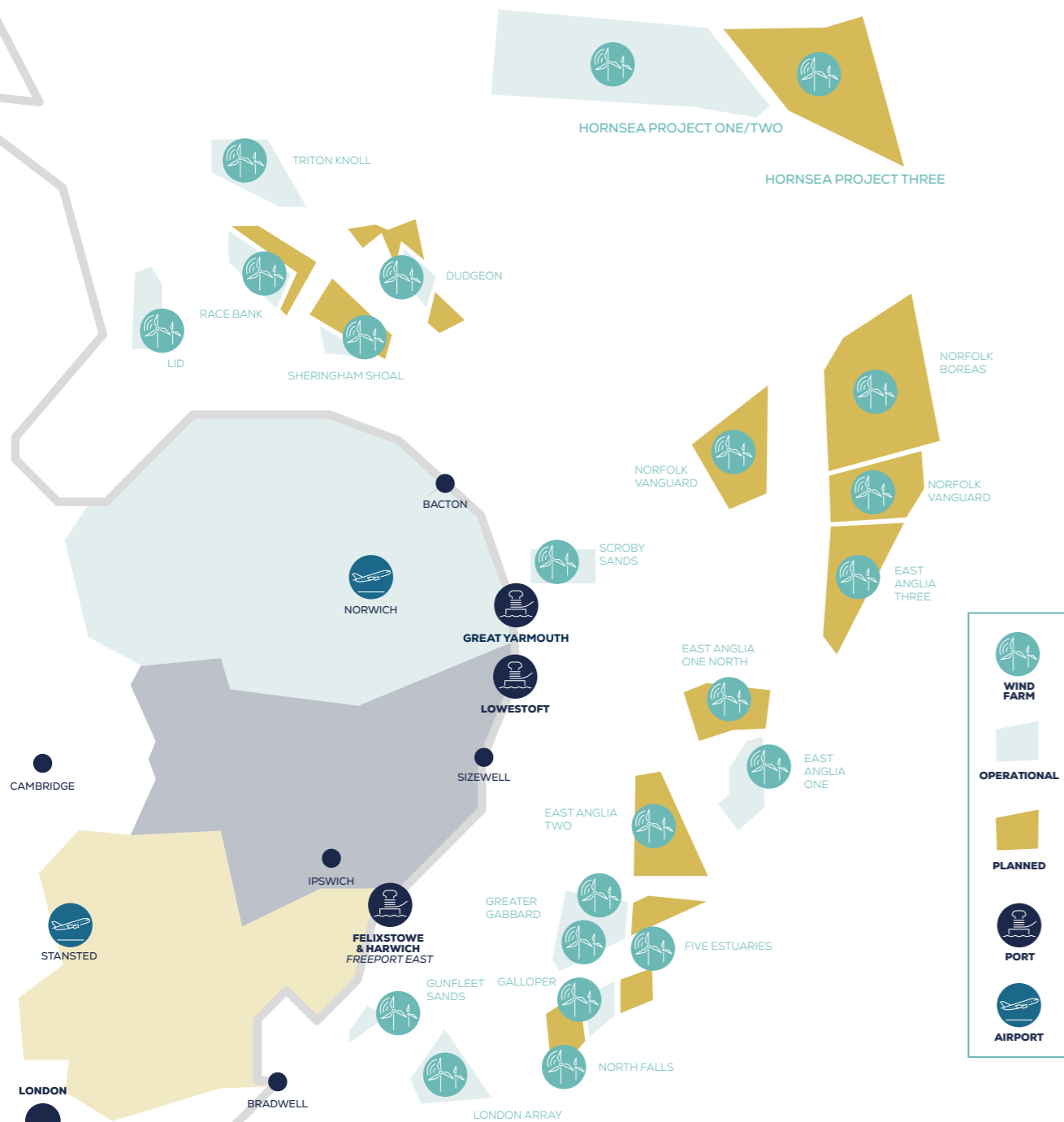
IAN PEASE
Business Development Manager,
GENERATE



ENERGY POWERHOUSE

BUILDING THE UK'S ENERGY SECURITY, POWERING THE ENERGY TRANSITION

The UK SNS is home to one of the world's largest clusters of offshore wind. With 5GW of installed operational capacity, 7.3GW of recently consented developments and a further 1.5GW in the planning pipeline, there is no better place for offshore wind than the East of England.



Offshore wind installed and operational in the SNS totals 1073 turbines across 16 wind farms.

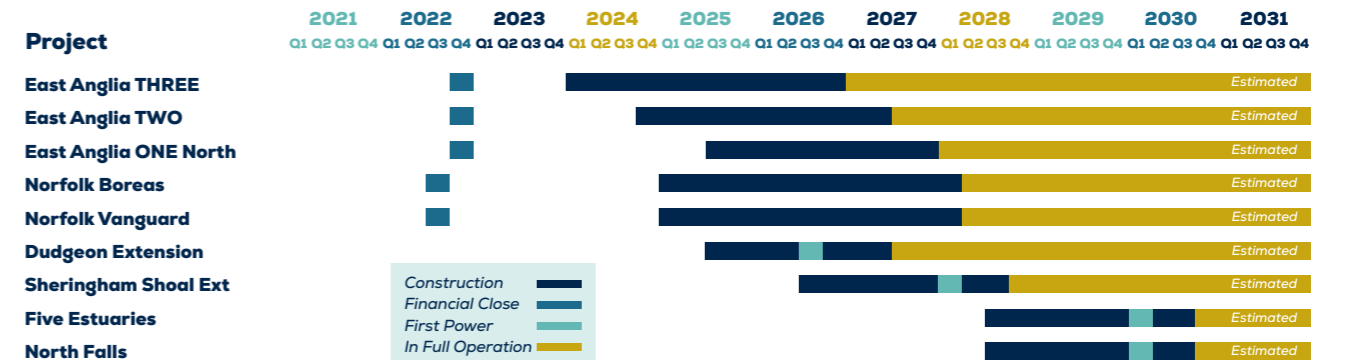
Windfarm	Developer / Operator	Capacity (MW)	No. Turbines	Turbine Model
Scroby Sands	E-ON	60	30	V80-2.0 MW
Kentish Flats	Vattenfall	90	30	V90-3.0 MW
Inner Dowsing	SIEMENS	97.2	27	SWT-3.6-107
Lynn	SIEMENS	97.2	27	SWT-3.6-107
Gunfleet Sands	Ørsted	172.8	48	SWT-3.6-107
Greater Gabbard	SSE	504	140	SWT-3.6-107
Sheringham Shoal	Equinor	316.8	88	SWT-3.6-107
Thanet	Vattenfall	300	100	V90-3.0 MW
Lincs	Ørsted	270	75	SWT-3.6-120
London Array	Ørsted	630	175	SWT-3.6-120
Gunfleet Sands (Demo)	Ørsted	12	2	SWT-6.0-120
Kentish Flats Extension	Vattenfall	49.5	15	V112-3.3 MW
Race Bank	Ørsted	573.3	91	SWT-6.0-154
Dudgeon	Equinor	402	67	SWT-6.0-154
Galloper	RWE	353	56	SWT-6.0-154
East Anglia ONE	ScottishPower Renewables	714	102	SWT-7.0-154

Capital expenditure in the East of England's offshore wind sector over the next 10 years is set to exceed £15 billion.

Windfarm	Developer	Capacity (MW)	No. Turbines (max est.)	Project Value (£m)	Status
East Anglia ONE North	Scottish Power Renewables	600	41	1677	Consented
East Anglia TWO	Scottish Power Renewables	940	67	1900	Consented
East Anglia THREE	Scottish Power Renewables	1400	95	2935	Consented
Norfolk Vanguard	Vattenfall	2800	145	3100	Consented
Norfolk Boreas	Vattenfall	1400	129	3100	Consented
Five Estuaries	RWE	353	79	565	Planning
North Falls	RWE/SSE	504	72	820	Planning
Dudgeon Extension	Equinor	402	34	665	Planning
Sheringham Shoal Ext	Equinor	317	27	524	Planning
Totals		8.716 GW	689 Turbines	£15.286 billion	

Source: 4c Offshore

The contiguous nature of offshore wind project delivery in the East of England offers long term investment opportunities construction, operations and maintenance activities.



Source: 4c Offshore / OPERGY 2022

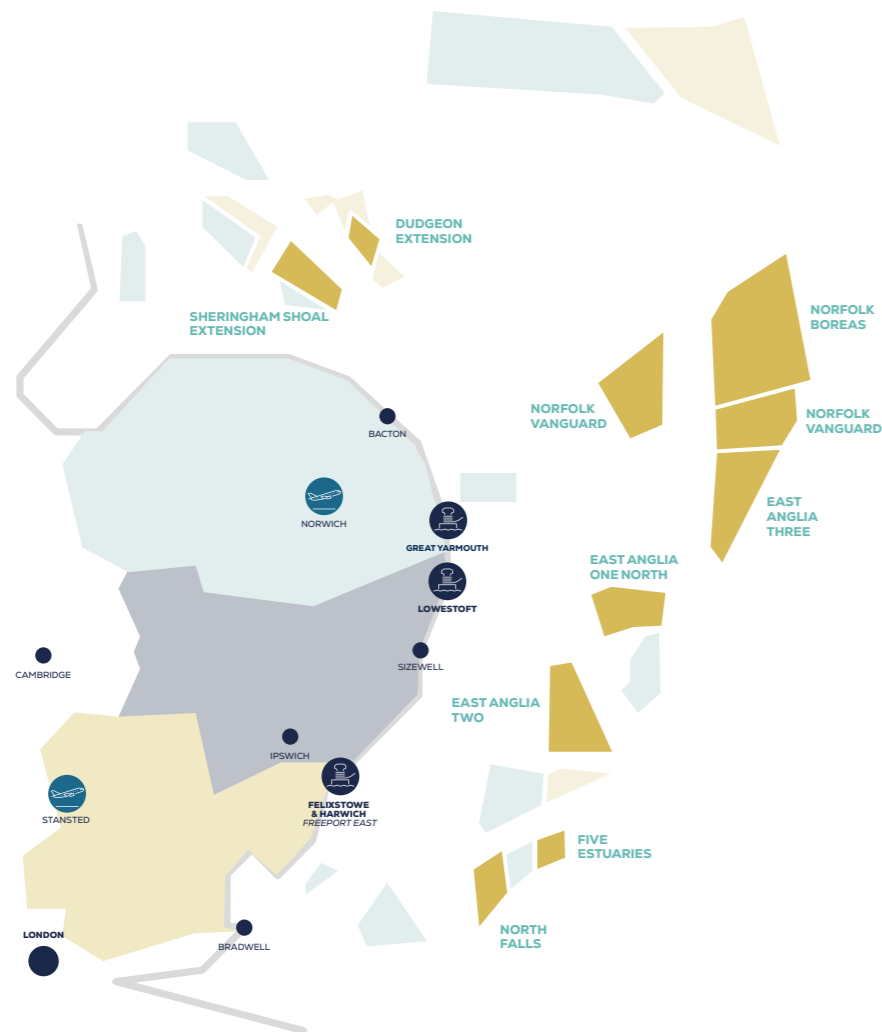
PROJECT PIPELINE



ScottishPower Renewables is a well-established part of the East of England's clean energy community with its flagship 714MW East Anglia ONE offshore wind farm generating clean energy since 2020, operated and maintained from a state-of-the-art facility in Lowestoft's PowerPark.

East Anglia Hub is a combined build programme comprising of EA THREE, EA ONE North and EA TWO totalling 3.0GW. Plans are well advanced, with development consent granted for EA THREE in 2017. When fully operational, East Anglia Hub will provide enough clean energy to power the equivalent of 2.7 million UK homes.

Capacity:	EA THREE 1.4GW EA ONE North 600MW EA TWO 940MW
No. of turbines:	EA THREE 95 EA ONE North 41 EA TWO 67
Preferred turbine:	Siemens Gamesa SG 14-222 DD
Combined capex:	£6.5 billion
Water depth:	24.5m to 73m
Foundations:	Grounded: monopile
Construction:	2024



Extensions to Sheringham Shoal and Dudgeon Offshore Wind farms will double the capacity of the existing Sheringham Shoal and Dudgeon offshore wind farms providing renewable energy to power an additional 785,000 UK homes and making an important contribution to the UK's decarbonisation and energy security goals.

Capacity:	Dudgeon Extension: 402 MW Sheringham Shoal Extension: 317MW
No. of turbines:	Dudgeon Extension: 34 Sheringham Shoal Extension: 27
Preferred turbine:	14MW: OEM not specified
Water depth:	11m to 25m
Foundations:	Grounded: not specified
Consent decision:	2024
Construction:	2027



Five Estuaries Offshore Wind Farm is the sister extension project of the existing Galloper Wind Farm, also operated by RWE. It has planned capacity to power up to approx. 380,000 average UK households.

North Falls is being developed by a 50/50 joint venture company owned equally by SSE Renewables and RWE Renewables. It is an extension project to the existing Greater Gabbard Offshore Wind Farm, with a proposed capacity of 504MW enough to power approx. 400,000 average UK households

Capacity:	FIVE ESTUARIES: 353MW NORTH FALLS: 504MW
No. of turbines:	FIVE ESTUARIES: 79 NORTH FALLS: 72
Preferred turbine:	Not specified
Water depth:	5m to 59m
Foundations:	Grounded: not specified
Consent Decision:	2025
Construction:	2027



Vattenfall's Norfolk Vanguard and Norfolk Boreas offshore wind farms were granted development consent in February 2022. Located 47KM from the Norfolk coast, when both wind farms are fully operational, they will provide enough clean energy to power the equivalent of 4.6 million UK homes. In March 2023, Vattenfall selected the port of Great Yarmouth as the location for its Norfolk projects' O&M base.

Capacity:	Norfolk Vanguard 2.8GW Norfolk Boreas 1.4GW
No. of turbines:	Norfolk Vanguard 145 Norfolk Boreas 129
Preferred turbine:	Siemens Gamesa SG 14-236 DD
Combined capex:	£6.2 billion
Water depth:	22.5m to 41m
Foundations:	Grounded: monopile (most likely)
Construction:	2026

PORT OF GREAT YARMOUTH

OFFSHORE ENERGY CAPABILITY

The port of Great Yarmouth, operated by Peel Ports, is a modern, multi-purpose facility offering 24/7 unrestricted operations. Its deep-water outer harbour can accommodate vessels up to 220m in length and up to 10m at chart datum with a 1-2m tidal range, while the river port can accommodate vessels of up to 120m in length, or up to 5.7m at chart datum with a 1-2m tidal range.

The port offers some of the fastest steaming times to installed and planned offshore wind farms in the SNS making it an ideal base for a cluster of energy businesses engaged in offshore wind construction, operations and maintenance.

Peel Ports have a fully functioning North Terminal, with plans to create a new Southern Terminal, consisting of an additional 350m of quay, RoRo ramp, new heavy lift pad area and approx. 10 hectares of strengthened outdoor storage space.

STEAMING TIMES

Wind Farm Locations	Distance N. Miles	Hours at 12 knots	Hours at 25 knots
East Anglia ONE	34	2.83	1.36
East Anglia ONE North	28	2.33	1.12
East Anglia TWO	28	2.33	1.12
East Anglia THREE	43	3.58	1.72
Norfolk Vanguard East	50	4.17	2.00
Norfolk Vanguard West	31	2.58	1.24
Norfolk Boreas	58	4.83	2.32
Hornsea 1	82	6.83	3.28
Hornsea 2	82	6.83	3.28
Hornsea 3	98	8.17	3.92
Triton Knoll	86	8.17	3.44
Dogger Bank A	137	11.42	5.48
Dogger Bank B	148	12.33	5.92
Dogger Bank C	175	14.58	7.00
Borssele	73	6.08	2.92
South Holland	76	6.33	3.04
North Holland	84	7.00	3.36

OUTER HARBOUR

- ▲ Quay space – 28,500m²
- ▲ Land potential – 50 acres
- ▲ Deep water for new generation of wind installation vessels
- ▲ No lock or air draught restrictions

INNER HARBOUR

- ▲ Multiple berths
- ▲ Pontoon potential in designated locations
- ▲ Lock free easy access at all states of tide
- ▲ Multi-million investment to create an energy O&M Campus
- ▲ 24/7 operations

- ▲ Land to lease
- ▲ Installation base for Sheringham Shoal and Lincs offshore wind farms
- ▲ Purpose-built turbine pre-assembly base for Galloper offshore wind farm
- ▲ Construction and installation base for East Anglia ONE offshore wind farm
- ▲ Adaptable storage and warehousing
- ▲ Dry dock facilities
- ▲ Equinor O&M base for SNS offshore windfarms and operations centre for Hywind, Scotland
- ▲ RWE O&M base for Scroby Sands



Image credit: Peel Ports



GREAT YARMOUTH



GREAT YARMOUTH

Great Yarmouth is a vibrant, entrepreneurial coastal Enterprise Town and home to some of the biggest names in offshore wind with both Vattenfall and Equinor choosing it as the home of their operations and maintenance hubs. Growth of the clean energy sector has resulted in significant investment and development projects taking place in the town in order to create the ideal conditions required for businesses to thrive.

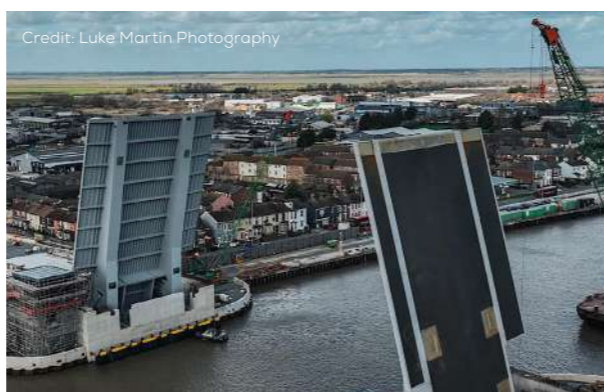
O&M CAMPUS

The £21.4 million project seeks to capitalise on the now well-established offshore renewables sector off the east coast of Great Yarmouth. Construction started in April 2023 with phase 1 due to take around 12 months to complete, it will see 190m of river quay refurbished and upgraded, along with the creation of new vessel pontoons and delivery of a revised road layout and associated infrastructure to optimise the land available for future development. Vattenfall recently announced that they will use this campus as a base for the construction, operations and maintenance of their Norfolk Projects.

The O&M Campus is located next to Great Yarmouth's deep water outer harbour and river port with quick access to a new £121million river crossing. The Herring Bridge will reduce congestion and improve connectivity to the port and other key employment sites.

KEY FACTS:

- ▲ Up to 32,040 m² of prime industrial/commercial space:
- ▲ 23,960 m² of industrial / commercial floorspace and 8,080m² of exterior / laydown / storage
- ▲ Providing significant land for office, storage and technical buildings



DEDICATED TO THE ENERGY INDUSTRY



SUPERFAST BROADBAND



NEAR PORT & HARBOUR



ENTERPRISE ZONE STATUS



FAST TRACK PLANNING

UNIVERSITY CAMPUS

Education and skills opportunities address the current skills shortages and future pressure points in this key growth area. A new learning centre and university campus is being planned and will provide an enhanced route to economic activity and support growth.

To complement the O&M Campus, Great Yarmouth Borough Council is leading the development of a business incubator facility that will provide shared workspace and innovation facilities for start-up and small to medium sized businesses in the energy sector. The facility will provide the space to co-locate and work with similar organisations within affordable, adaptable

and flexible workspaces enabling knowledge sharing and business collaboration. Located on South Beach Parade, the incubator will form an important cluster of businesses in Great Yarmouth, increasing employment and entrepreneurial opportunities, benefiting from its close proximity to the port and energy sector hub, located nearby.

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GREAT YARMOUTH ENERGY PARK

The Great Yarmouth Energy Park comprises a 50 acre site in South Denes, a prime site near the river port and the deep-water harbour. Suitable for energy and port-related industries, a range of sites for design and build opportunities are available on a freehold or leasehold basis. The park is just a few hundred metres from the new O&M Campus currently being constructed.



BEACON PARK

Beacon Park is a leading business location on the east coast of East Anglia, an established hub for the energy sector and just 5 miles from the port. The business park, with excellent road access to the A47 through Norfolk provides high-quality office and industrial/warehouse premises with opportunities for bespoke design and build. The units, in a landscaped setting and with good car parking provision, are available to lease or buy with grant support for eligible companies through the New Anglia Local Enterprise Partnership Growth Hub.



PORT OF LOWESTOFT

HUB FOR OFFSHORE ENERGY

The port of Lowestoft, operated by Associated British Ports (ABP), is an important regional sea servicing route between the UK, Europe, Scandinavia, and the Baltic states. Lowestoft

has become as a thriving centre for servicing the offshore wind industry, is home to SSE and ScottishPower Renewables O&M bases and handles in excess of 6,700 vessel calls each year, including platform supply, crew transfer, support and marine survey vessels.

LOWESTOFT EASTERN ENERGY FACILITY (LEEF)

In March 2021, ABP announced a five-year plan to develop the Lowestoft Eastern Energy Facility (LEEF) involving an initial £25 million investment in state-of-the-art infrastructure to support the offshore energy industry.

Encompassing sites to the East (phase 1 of the project) and West of the Harbour, LEEF is tailored to the offshore energy industry's latest requirements, and creates a highly competitive offer for ABP's customers.

From 2024 LEEF East will create a step change in marine capability and capacity for offshore wind customers, with three new deep-water berths spanning over 360m, additional CTV berthing capacity and 8 acres of hinterland. LEEF East is ideally positioned to support Lowestoft's existing customers and future offshore wind projects with O&M and construction support activities.

Phase 2 of the project, LEEF West, is expected to be in place by 2026, bringing up to 200m of additional quayside and a further 5 acres of developable land.



Image credit: Associated British Ports

OUTER HARBOUR

- ▲ Total port area -39.2 ha
- ▲ Quay length -1,400m
- ▲ No lock or air draught restrictions
- ▲ ScottishPower Renewables and SSE/RWE located on ABP port estate, adjacent to PowerPark

- ▲ Lock free easy access at all states of tide
- ▲ Construction support base for Galloper Offshore Wind Farm
- ▲ Mobile crane at North Quay terminal with 16,000m² of storage
- ▲ 5.46 hectares of surface land for redevelopment *image inset*
- ▲ 8,000m² of storage space
- ▲ 3 modern transit sheds
- ▲ Vessel support facilities for CTV operators
- ▲ Dry dock facilities

INNER HARBOUR

- ▲ Quay length - 2,100m
- ▲ Surrounding Enterprise Zones
- ▲ 24/7 operations



STEAMING TIMES

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East Anglia ONE	34	2.83	1.36
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South Holland	76	6.33	3.04
North Holland	84	7.00	3.36

LOWESTOFT

GULL WING LOWESTOFT

Work is underway on a new £145 million Gull Wing Bridge in Lowestoft. The bridge, which will cross Lake Lothing, due to open in 2024 and will bring additional economic and transport links to the town.



POWERPARK, LOWESTOFT

PowerPark, located immediately to the north of the port of Lowestoft's outer harbour, has been designated as a location for clean energy businesses, building upon the success of existing operators and supply chain companies resident in the area.



Business confidence is already high in PowerPark, home to a number of offshore wind developers and operators, including SSE/RWEs' Greater Gabbard Offshore Wind Farm base and ScottishPower Renewables' £25 million East Anglia One O&M base.

NEW FOR ENERGY BUSINESSES

To support businesses to invest in Lowestoft, a high-quality scheme comprising of 16 flexible units ranging from 34m² to 223m² is coming to PowerPark in 2023.

The Nexus is a £2,950,000 investment by East Suffolk Council on Newcombe Road will include units with office, warehousing and workshop space with 5m eaves height and allocated on-site EV parking.

Available with competitive lease options, the development will act as exemplar of sustainable building methods, incorporating clean energy power supply and innovative energy efficiency and storage technologies.

The development offers easy access to the port of Lowestoft, OrbisEnergy and East Coast College's Energy Skills Centre and will benefit from ultra-fast broadband.



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DEDICATED TO THE ENERGY INDUSTRY



SUPERFAST BROADBAND



NEAR PORT & HARBOUR



ENTERPRISE ZONE STATUS



FAST TRACK PLANNING

CLEAN ENERGY INNOVATION HUB

At the heart of PowerPark is the well-established and internationally recognised, innovation and incubation hub for clean energy business, OrbisEnergy. Offering flexible workspaces, conference and meeting facilities and virtual office solutions, the OrbisEnergy ecosystem includes leading energy-related companies and the Offshore Renewable Energy (ORE) Catapult. OrbisEnergy is home to over 40 businesses both physically and virtually, providing a landing pad for inward investors and a launchpad for ambitious clean energy companies.

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FREEPORT EAST HARWICH

Freeport East has been designated as one of eight new Freeports announced by HM Government in March 2021. Freeports are secure customs zones where business can be carried out inside a country's land border, but where different customs rules apply.



Image credit: Hutchison Ports

Bathside Bay in Harwich, one of the tax sites identified in Freeport East, is ideally positioned to attract national and international manufacturers and developers for offshore wind.

Energy from local offshore wind and new nuclear sources will drive the development of a Green Hydrogen Hub in the Freeport utilising the existing mass of road, rail, and maritime freight movements at the ports to deploy an effective and influential hydrogen programme for uses across the freight sector.

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Unlimited opportunities in the East of England



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