

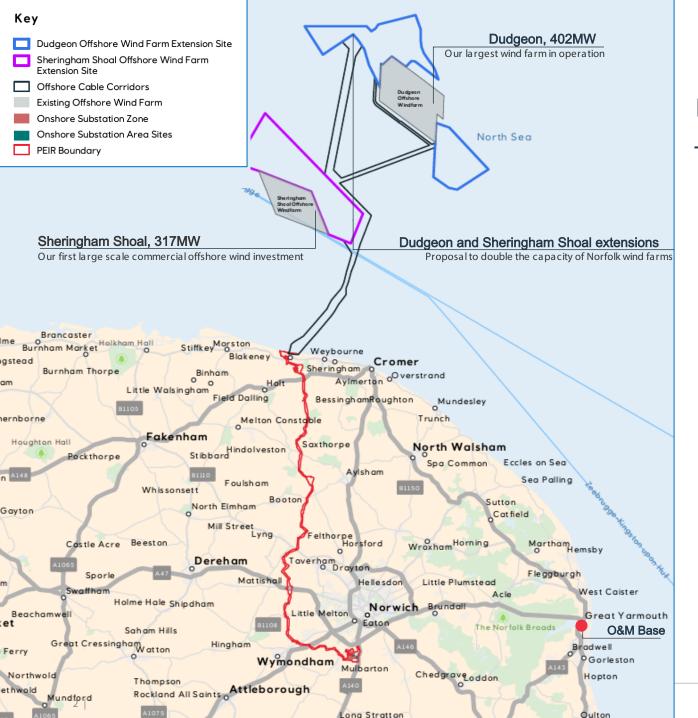
Geophysical and Geotechnical Surveys with Local Contractors

Sheringham Shoal & Dudgeon Extension Projects

Antoine Bertrand, BouchraSouab & Elisabeth Grindstad

17.4.24







Equinor in the Greater Wash Area:

Today:





155 Turbines



730,000



Largest
UK
Energy Supplier

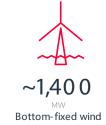


100 PEOPLE IN G.Y. Employed



700 +
SUPPLIERS
Across the UK (all BA's)

Tomorrow:

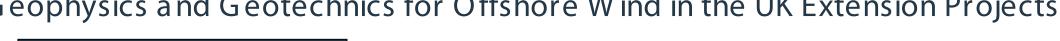








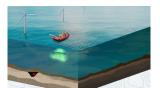
Geophysics and Geotechnics for Offshore Wind in the UK Extension Projects

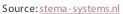


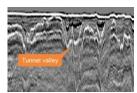


Processing and Interpretation

Geophysical surveys





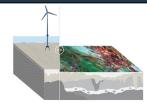


Source: pgs.com

Acquired geophysical data such as seismic data, bathymetry, sonar, SBP (Sub Bottom Profile data) among others help to understand the seabed and subsurface geology and sedimentology over the site. This is also used to derisk the site by identifying potential geohazards (shallow gas, peat, subseabed boulders, challenging geotechnical units)



Collaborating to design the most optimal surveys



Source: pgs.com

Combining all together the geotechnics and geophysics gathered for the site. This is used to ensure safe final cable routing and WTG (Wind Turbine Generator) locations but also the most appropriate foundation concept/structure design Geotechnical surveys



Laboratory testing



Source: internal Equinor



Source: fleetmon.com

Obtain soil/rock properties across the site by sampling at different locations and using different methods like CPT (Cone Penetration Testing) or diverse sampling methods. Soil/rock properties are transformed into engineering parameters for the design and installation of structures





Design and Installation of (sub) seabed structures (piles, cables.).





Site Characterization on SEP & DEP













~15 survey days

Objective:

Survey export cable route



~30 survey days

Objective:

Reconnaissance survey within lease area (incl seismic)

Gardline

~30 survey days

Objective:

Preliminary site characterization



~75 UXO survey days

 ~ 40 seismic survey days

Objective:

Detailed UXO (Unexploded Ordnance) and seismic survey within lease area



>100 survey days

Objective:

Collect samples for laboratory testing

~7 survey days

Objective:

Collect samples along the cables' route





Sources: fleetmon.com Restricted



SUPPORTING UK CONTRACTORS

Geophysical Activities on SEP & DEP in UK

British Geological Survey (BGS)

Ground Modeling

Support of Geophysical Surveys (acquired by Gardline):

- Ports of Hull, Grimsby, and Teesside (Mobilization and demobilization of the vessels)
- Turner Price (Food supply)
- Maritime Bunkering Ltd (Bunkering)





SUPPORTING NORFOLK CONTRACTORS

Geophysical Activities on SEP & DEP in Norfolk

Gardline: Our Geophysical Survey Main Contractor

 Local FLO Onboard Vessel & Scouting Vessel

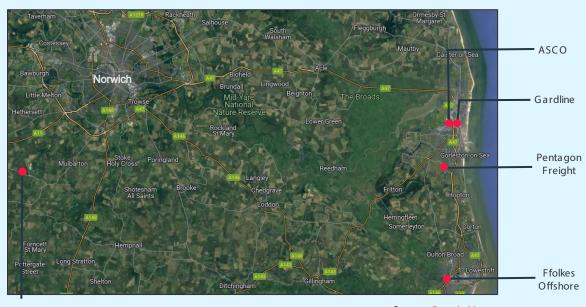
Supporting Gardline:

- ASCO (Bunkering)
- Ffolkes Offshore Lowestoft (Ships Agency / quayside services)
- Pentagon Freight (Freight movements/HMRC)

OrdTek:

UXO Risk Assessment & ALARP Certificates

Norfolk



Ordtek Limited Source: Google Maps

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SUPPORTING UK CONTRACTORS

Geotechnical Activities on SEP & DEP in UK

ChalkRock Ltd

Chalk specialists (Geology & Engineering)

Imperial College London

Chalk Specialists (Advanced Lab. Testing)

Caldive

Diving Contractor (Removal of Potential Seabed Obstructions)

Acteon (Benthic, UTEC)



Benthic: Geotechnical Data Acquisition



UTEC: Survey & Positioning Services





DIRECT LOCAL INVOLVEMENT

The 2022 Borehole Campaign

Great Wash Operations and Maintenance Hub

- Emergency Support
- HSE Support & Vessel Inspections

Local FLO present onboard at all time during operations

Close communication with fisheries

GAC UK - Great Yarmouth Office

• Shipping, logistics, ...

Great Yarmouth



8 | Restricted



DIRECT LOCAL INVOLVEMENT

The 2022 Borehole Campaign

Great Yarmouth Port Company (Peel Ports)

 Berthing, Linesmen, Sludge Disposal & More

East Coast Waste Limited

Waste Disposal

Marineserv UK Limited

• Local Freightage Of Equipment

Easter Fluid Power

 Hydraulics Assistance, Fluids & More

Great Yarmouth



Source: Google Maps

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A LOCAL SUPPLIER PORTFOLIO

Direct & Indirect Impact

- 18 Suppliers & Tier 2 Sub-Suppliers
- 200 + Hotel Nights
- Use of local transport networks
- Enjoying restaurants, retail & local activity



10 Restricted



A Special Thank You

For their professionalism and efficiency:

- Ocean Zephyr Crew
- Benthic Team
- Equinor's Emergency Response Team
- Offshore Client Representatives

.and especially to HM Coastguards:

• For their exceptional response, during a crew rescue on 22nd October 2022.































SHERINGHAM SHOAL
Offshore Wind Farm

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