

Kingfisher Bulletin

Talking Points

November 2016



Floating wind:

New Technology and Potentially New Hazards to Fishing

Fishermen on the East coast of Scotland will be the first to experience new floating wind turbines in a 'farm' layout when Statoil begin development of their Hywind pilot project in 2017. Hywind will be located within the Buchan Deeps, approx. 25-30 km off the coast of Peterhead and will see five, 6MW floating turbines installed.

Floating wind is particularly well-suited to Scotland. A combination of high wind speeds, near-shore deep-water sites and the ability to use existing infrastructure from the offshore oil and gas industry forms

the necessary conditions for floating wind technology in Scottish waters.

Floating wind is being presented as a way to exploit offshore wind in deeper waters. The commonly used 'monopile' foundation used

for all currently constructed offshore wind farms around the UK – around 30 to date – is only suitable for water depths of around 50 metres and less. To allow wind farms to be positioned in deeper waters and in areas of high wind speed, a new technology is required. Floating wind has the potential to provide this technology.

The floating turbines at Hywind are classed as having 'spar-buoy' foundations, as opposed to other floating wind foundation technologies such as 'semi-submersible'

and 'tension leg platform'. Each turbine will consist of a steel cylinder filled with a ballast of water and rocks. Each will extend 80 metres beneath the sea's surface. They are attached to the seabed by a three-point mooring spread consisting of a catenary mooring line and a suction anchor. Inter-array cables connect the turbines, with an export cable taking the power to shore.

The very new technology proposed by Hywind creates questions for the fishing industry, these mainly relate to access and safety.

There is no legislation restricting fishing within any of the UK's operational wind farms with operators able to apply for a 50 metre safety zone around turbines if required. Floating turbines have mooring lines extending 700-900 metres from each turbine ending with a suction anchor. These lines 'touch-down' on the seabed approximately 175 metres away from each turbine. There are fishing industry concerns that on the grounds of safety, the mooring systems will likely preclude the continuation of fishing activity previously seen in the area.

Onshore construction for Hywind began during 2016, with offshore construction scheduled to start in spring 2017 and final commissioning complete by the end of 2017. The development holds a licence for 25 years.

For further information relating to the construction of Hywind during 2017 will be found within the Kingfisher Bulletin, or on Twitter at @KingfisherInfo.

HYWIND SCOTLAND PILOT FACTS:	
Turbine Quantity & Size	5 x 6MW
Weight	400tons (Generator & Blades) 11,500tons (Total Structure)
Turbine Height	253m
Above Water	175m
Below Water	78m
Rotor Diameter	154m
Draft Hull	78m
Diameter at Water Line	9.5m
Water Depth	90-120m
Mooring Lines	3 per turbine, each 700-900m in length
Mooring Line 'touch-down'	~175 metres from each turbine
Distance between turbines	1,400m

Fishing and the marine aggregate industry



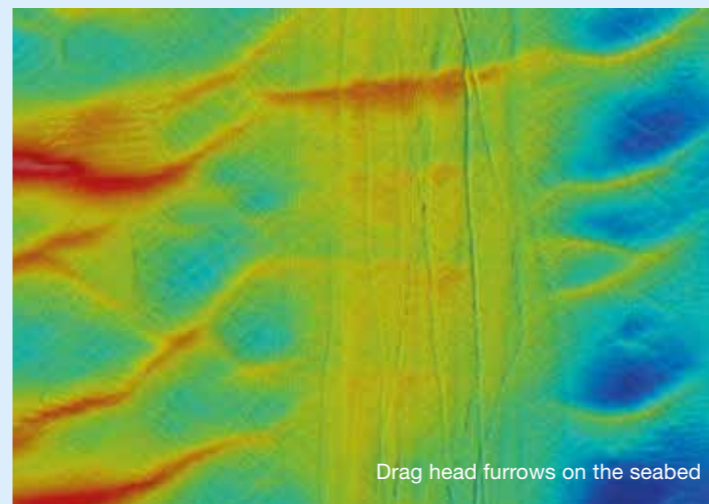
Dredger in active operation

Marine aggregate operations can interact with and have the potential to impact commercial fishing interests. This is due to the size of licenced extraction areas around the UK and also the operations of dredging vessels themselves.

There are 64 licenced marine aggregate extraction areas around the UK, equating to approximately 932km². Hotspots of activity can be found in the Irish Sea, the English Channel and the Southern North Sea. During 2015, 36% of the licenced area was defined as 'active' with only 83km² actually dredged during the year this is equivalent to 11% of the total licenced area.

Selection of a new aggregate area requires in-depth assessment. While sand and gravel seabed is widely distributed around the UK, it needs to meet very specific criteria for this to be economically viable for extraction:

- Sediment quality - very low levels of fine sand, silt and clay
- Thickness - typically over 2 metres thick
- Spatial extent – size of area to allow dredging to occur safely



Drag head furrows on the seabed



Drag head

The location of such deposits is extremely localised around the waters of England and Wales. The deposits tend to be 'relict' or fossil deposits, created by the effects of rivers and glaciers 20,000 years ago when sea levels were over 100m lower during the Ice Age.

Fishing and other environmental factors will be taken into account when decisions are made to grant a licence. These include spawning grounds, conservation features, or coastal impact considerations. Licences are only granted following comprehensive impact assessments.

There are no laws or restrictions to prevent fishermen, or other marine users from entering or using seabed areas that have been permitted for marine aggregate extraction. Active dredge area charts are produced to show where dredging operations may be taking place at any moment in time.

A marine licence for marine aggregate extraction can be issued for a maximum

of 15 years with reviews by the regulator every five years. Where resources remain, extensions may be granted subject to impact assessments – many of the current areas have been dredged for over 30 years.

Dredging is undertaken in tightly defined working areas or lanes to improve the consistency of the sand and gravel resource being dredged. This approach also reduces the potential for spatial conflicts with other marine users, including commercial fishing. Typically, each working area or lane will be worked to economic exhaustion before production operations move. This minimises seabed being impacted and previously dredged seabed can be left undisturbed to recover.

During aggregate extraction, trailer suction hopper dredgers are used, which can range in capacity from 1000 to 10,000 tonnes. Moving slowly forwards at between 1-2knts, the vessel will trail a suction pipe while a mix of sand, gravel and water is pumped into the cargo hopper. The

passage of the 'drag head', which is at the end of the suction pipe and rests on the seabed, will typically create a shallow furrow two to three metres wide and up to 0.5 metres deep.

There should be no hazards to fishing created by dredging as licences only permit the removal of marine sediments. Very rarely, items of equipment may be lost. Operators will inform fishermen of any obstruction through the Kingfisher Bulletin and the United Kingdom Hydrographic Office (UKHO) and all efforts will be made to recover items wherever this is practicable.

While dredging, vessels will display lights and shapes to show they are restricted in their ability to manoeuvre and a typical cargo can take between two and eight hours to load. Dredging frequency will depend on area but for a licence producing 500,000 tonnes around 100 dredging operations will be undertaken during the year.

Kingfisher Bulletins:
<http://www.kingfisherbulletin.org>

Dredge area charts:
http://www.bmapa.org/issues/other_sea_users.php

Historic dredge area info:
http://www.bmapa.org/issues/area_dredged.php

Code of practice:
http://www.bmapa.org/documents/Marine_Aggregate_Fisheries_Liaison_CoP_with_survey_notifications.pdf

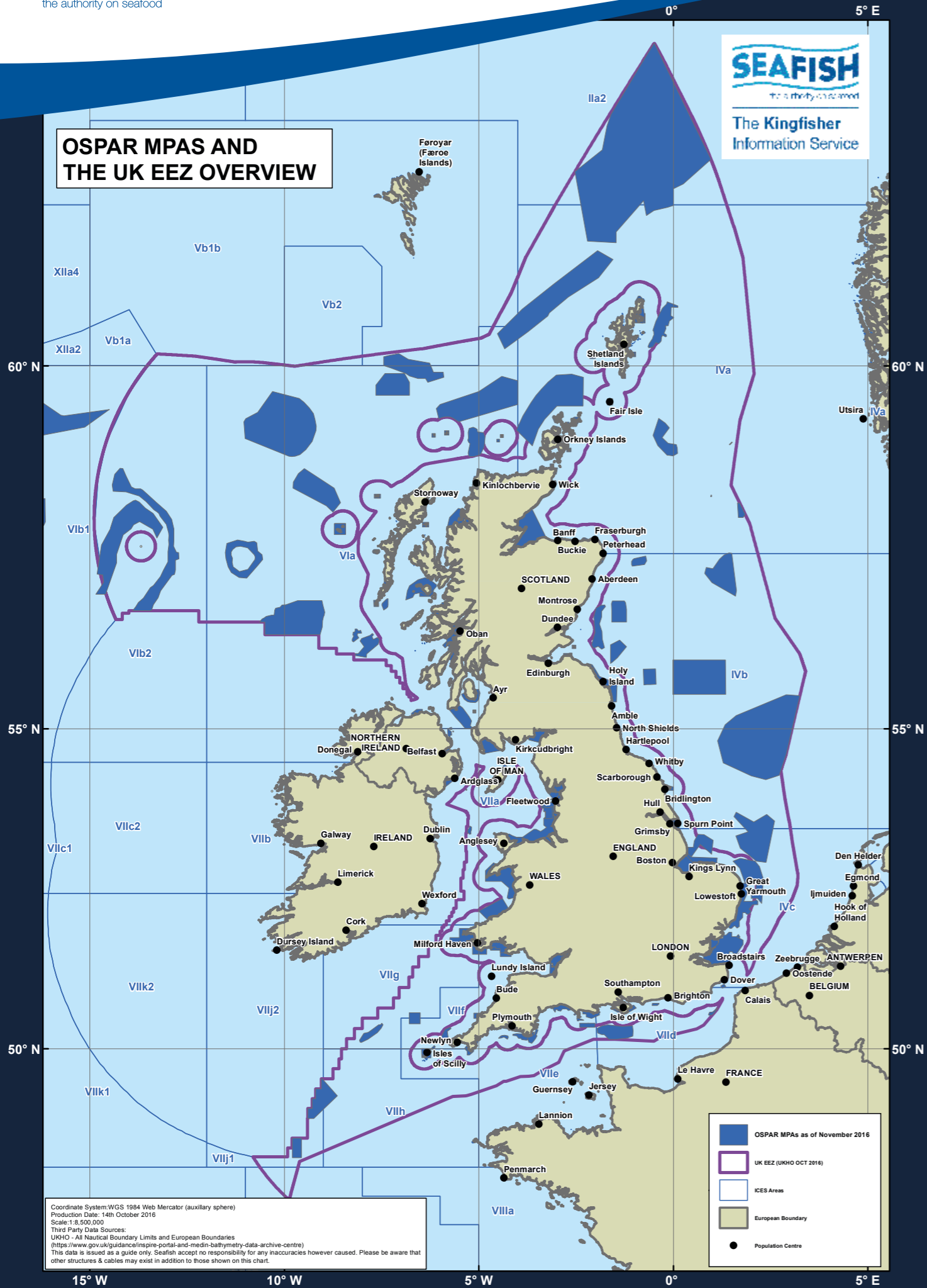
Impact of dredging:
http://www.bmapa.org/documents/Aggregate_Dredging_and_the_Marine_Environment.pdf

In response to fishing concerns, the aggregate industry undertake the following measures to ensure fishermen are better informed and have confidence in where the industry is operating:

- Active dredge area charts are published (twice a year).
- Issue notices through Kingfisher highlighting activity and hazards.
- Minimum of four-week notice prior to new activities commencing.
- Broadcast notice on channel 16 one hour prior to dredging
- Dredgers are monitored by a 'black box' system to ensure operations remain within areas – severe penalties for dredging outside of licenced areas.
- Regional marine aggregate/fisheries liaison committees for the South and East coasts established.
- To surrender areas no longer useful for extraction.
- Operational code of practice in force.

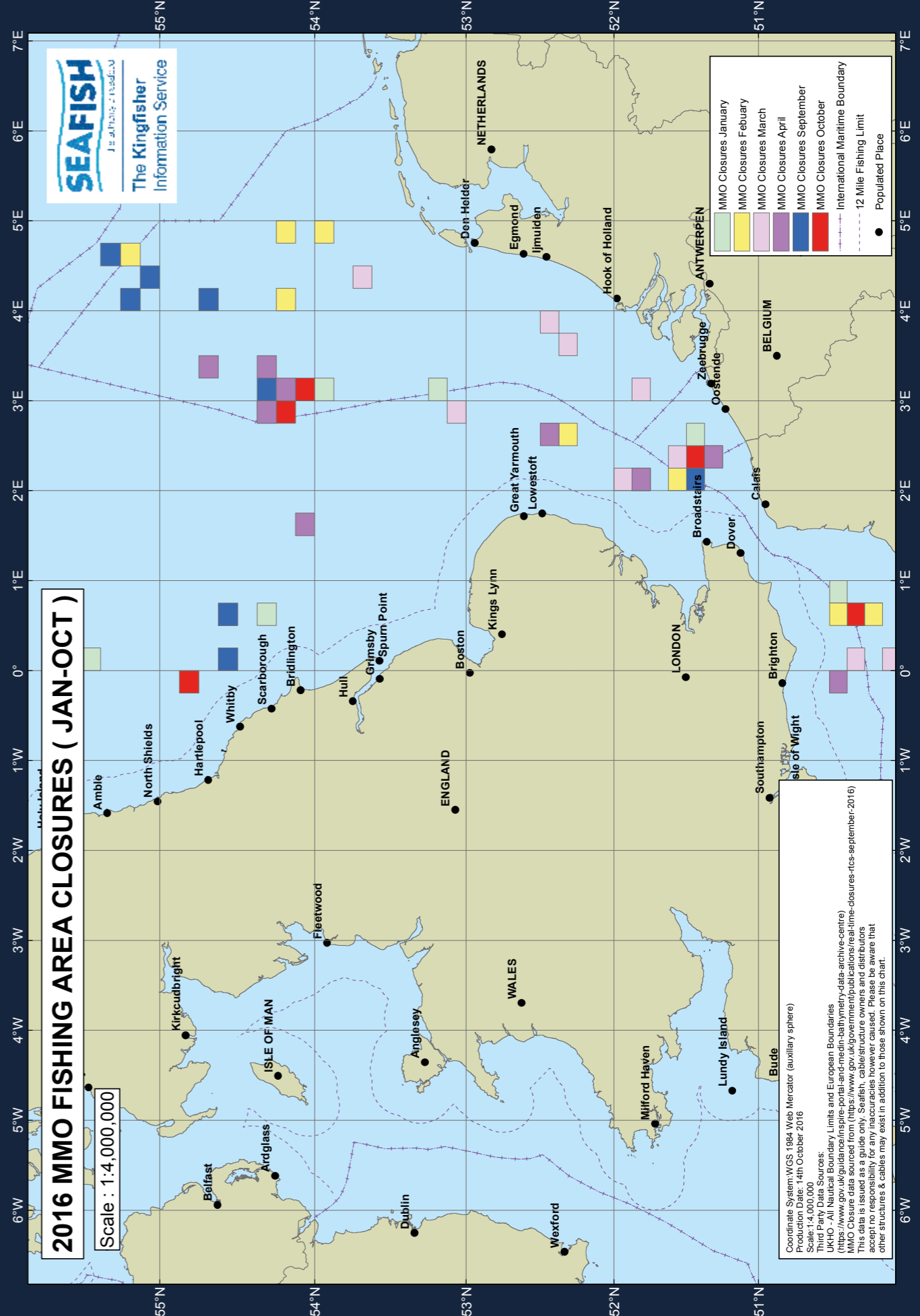


OSPAR MPAS AND THE UK EEZ OVERVIEW



2016 MMO FISHING AREA CLOSURES (JAN-OCT)

Scale : 1:4,000,000



What hazards do wellheads present to fishing?

A wellhead is the top section of an oil or gas well and sticks up above the seabed. Most wellheads will be located on the deck of a production platform and will be far above the seabed and safely out of reach of fishing gear within a Safety Zone. Some are subsea wellheads which sit directly on the seafloor at the point where the well is drilled. Subsea wellheads are a potential fishing hazard.

In general, Subsea wellheads are of two main types, active wellheads and suspended wellheads.

Active wellheads

These are currently operational and may be producing or injecting fluids such as oil, gas, or condensate. Because of this, they will almost certainly be within a Safety Zone. These wellheads will be connected to something by flow lines (pipes) and control lines (cables) which in turn will be connected to some sort of installation, either a platform, FPSO or subsea manifold. Some subsea wellheads may be several kilometres from their parent installation.

Suspended wellheads

These are generally stand alone and are not connected to an installation. Suspended wellheads represent a temporary pause in operations such as waiting for a platform to be installed or pending a decision on the well's future. Because they are not operational, they may be in open water and represent a hazard to fishing. They may remain suspended for years or decades so any suspended well should be treated as a permanent structure until its removal is confirmed.

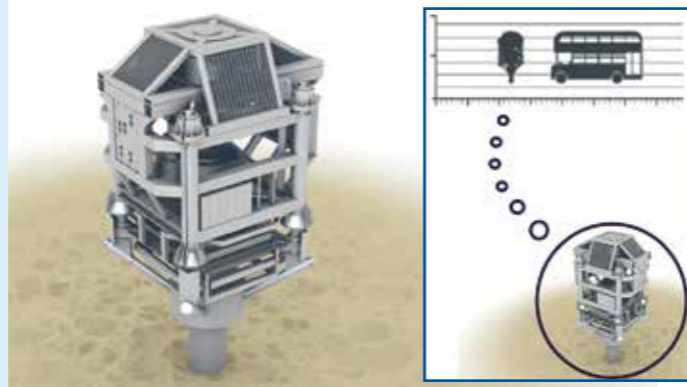
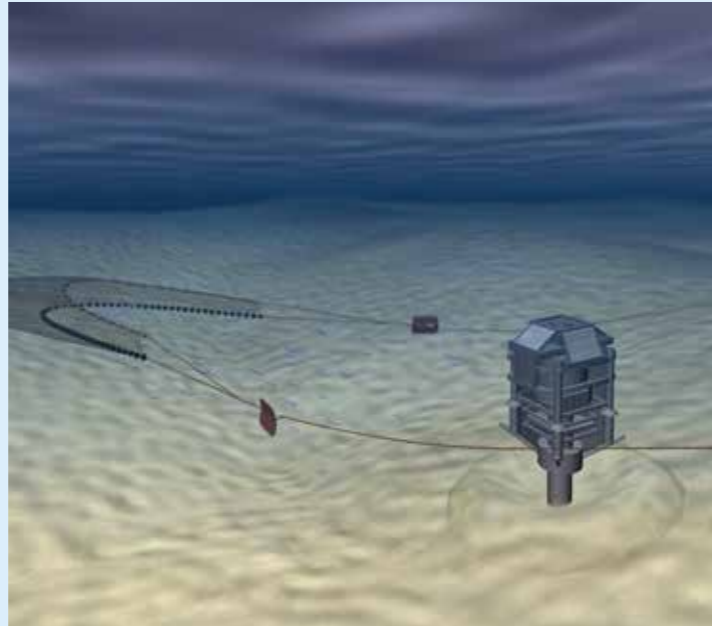
Subsea wellheads vary in size depending on other equipment they have in place. They present a large solid structure on the seabed that will be physically connected to well casing traveling many kilometres into the reservoir. This is in effect an immovable object to fishermen.

A typical suspended wellhead will protrude up to three metres above the seabed. Suspended wellheads often have a structure called a 'guidebase' around them which provides connectors for a drilling rig to latch onto should the well be re-entered. These structures look like an inverted table with four legs sticking up and pose a significant snagging hazard.

To put this in perspective, suspended wellheads are often found in open waters and are as tall as a London bus, fixed solidly to the seabed and if encountered by fishing gear, it will likely cause significant damage to the gear. They will not yield if snagged.

There have been approximately 7,600 wellheads installed in UK waters but only about half of these are Subsea wellheads. A large number of these subsea wellheads will have been removed from the seabed over time and many others will be within safety zones. In open water, there are approximately 200 suspended wellheads currently in UK waters that pose a significant hazard to fishing.

When a wellhead is removed from the seabed (abandoned) it is cut 10 feet below the seabed to minimise the risk of exposure.



Well casings below this point are a solid structure up to 32 inches in diameter, which if left protruding from the seabed would be a significant fishing hazard. Not all abandoned well sites are 'trawl swept', which is a service managed by the Scottish Fishermen's Federation (SFF) and is an arrangement between the operator and SFF. However, a side-scan sonar survey and Remotely Operated Vehicles (ROVs) are mandatory to check for debris left behind within a 50m radius.

Over the years, there have been examples of fishermen snagging suspended wellheads. In some cases this has been down to poor reporting from the oil and gas sector. Fishermen should be reminded to stay up to date with the latest Kingfisher Bulletin and FishSAFE Information. This data set is free of charge and contains all oil and gas structures in UK waters.

Pre-lay operations – prior to the installation of a Subsea cable

What will fishermen encounter?

The early stages of cable route planning and design are mainly desktop based with little requirement to go to sea. As soon as the cable operator has confirmed the most appropriate route for their cable, they will begin 'pre-lay' activities. These include surveys and sampling, taking the preferred engineered cable route from the desktop study as the centre line for the marine survey activities.

The marine survey composes of two elements. Firstly the Geo-Physical survey activities which are used to determine the bathymetry, sediment depths and types and any surface obstructions or features. Secondly, the Geo-Technical activities are used to clarify the Geo-Physical data, specifically the sub-bottom sediment data.

Geo-Physical survey:

1. Multi-Beam Echo Sounder.
2. Side Scan Sonar.
3. Sub-Bottom Profilers.

Geo-Technical survey:

1. Grab samples.
2. Vibro-Cores.
3. Cone Penetration Tests.

For fishermen at sea, these activities may be the first active sign that a subsea cable installation is being planned. Fishermen should have been made aware of these activities through early engagement and Notices to Mariners (NTMs).

Once all survey information is collected, the final engineered cable route is agreed between the cable owner and the marine installation contractor. The main criteria for route selection are avoiding seabed obstructions and maximising the



Typical cable industry grapnel

protection of the cable through burial activities, which are complemented through the cable armouring. Cable route position lists and charts are produced and used by the installation contractor to plan the installation activities.

Following survey operations, fishermen may begin to see additional cable industry vessels undertaking Route Clearance (RC) and Pre-Lay Grapnel Run (PLGR) activities. These activities take place prior to cable installation and are undertaken by a large cable ship or smaller dedicated vessels. Both activities involve the deployment of a towed grapnel along the seabed following the cable route.

Fishermen, particularly static gear fishermen, may find survey operations the most intrusive. This is due to the vessel utilising the full survey swathe either side of the planned route which may be several hundred metres either side of the planned cable route and typically three times water depth in length astern of the survey vessel for certain activities. During RC and

PLGR the ship is generally working along a narrow corridor along the planned cable route.

Cable owners will give fishermen notice ahead of any offshore activities commencing. This includes direct engagement with the fishing associations, NTMs and discussing the activity schedule with static gear fishermen over any potential relocation of fishing gear along the planned cable route. All information for planned activities and operational updates are also included within the Kingfisher Bulletin.

During operations, fishermen should note that pre-lay cable works are generally short term, in a small well defined area and of low disruption. Communication and cooperation is important to ensure both fishing and cable industries can coexist successfully. This is vital for cable activities to be undertaken without delay, with minimal interruption and above all safety.

Stay up to date

Always ensure you have the latest Kingfisher Bulletin and offshore fishing plotter data on-board.



“Since you put the winch in gear that turbine’s gaining on us!”



Sign-up to at www.kingfisherbulletin.org
or contact Kingfisher on the details below.



The Kingfisher
Information Service

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