

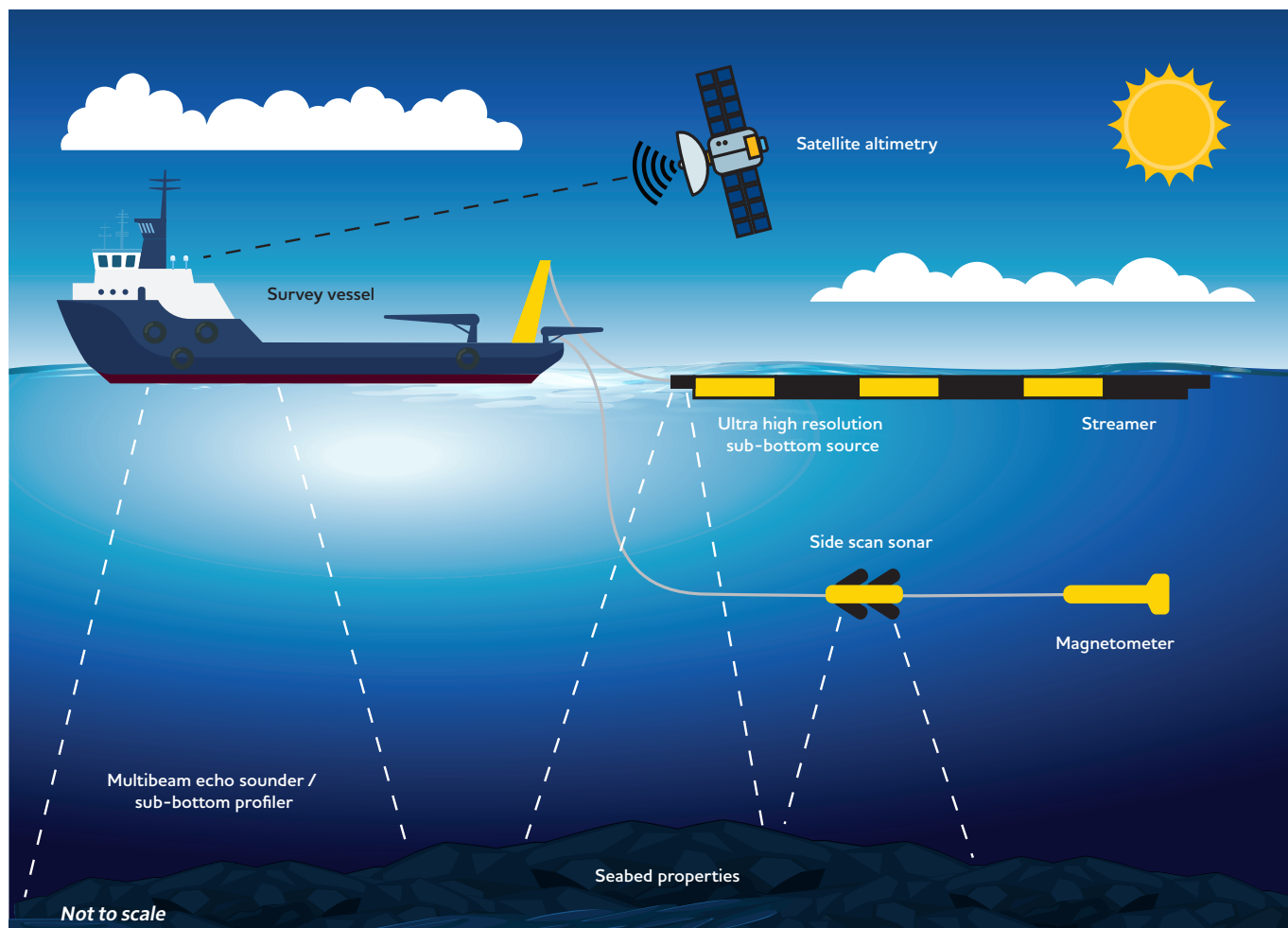
What is a geophysical investigation?

Geophysical investigations for offshore renewables are non-intrusive surveys that are carried out by vessels to gather information about a project area, such as the features and composition of the seabed, where developers plan to install infrastructure.

Geophysical investigations are also used to identify any hazardous areas or risks, archaeological features, abandoned structures or significant habitat that needs to be considered during design and construction of renewable energy projects, such as an offshore wind farm.

Equipment for geophysical investigations typically includes multi-beam echo sounders, sub-bottom profilers, side scan sonar, magnetometers and underwater cameras. It is common for commercial ships, fishing vessels, research vessels or even recreational boats to use sonar and echo sounders to visualise the make-up of the seafloor.

The data gathered from geophysical investigations is used to produce maps which are then used to inform the design and layout of a wind farm.



Why are geophysical investigations necessary?

At the very early stages of offshore renewables developments, geophysical investigations are important to:

- Determine the make-up of the seabed (Is it hard or soft? Are there hills, reefs or deep holes?).
- Map and define the seabed to provide planners with the knowledge that there is enough information available to proceed confidently and safely.
- Provide a model supported by data taken from geotechnical information. It is akin to examining the sub-surface through a keyhole.*

*Source - How a geophysical survey is crucial to offshore wind farm planning, Acteon, accessed 6 November 2023

How are offshore renewables geophysical investigations different to offshore petroleum seismic surveys?

Marine seismic surveys conducted for offshore petroleum are not conducted for offshore renewables.

Offshore petroleum

Marine seismic surveys are a form of geophysical survey typically used to generate high resolution images of deep geological layers (many kilometres below the seafloor). These are often undertaken for the purpose of locating potential hydrocarbon reservoirs.

A higher intensity noise source is needed to penetrate the seabed to the required depths and produce high quality images.

Offshore renewables

Geophysical investigations are conducted to gather information on the composition of the seabed where infrastructure for offshore renewables is planned to be installed.

These can generate suitable data with much lower intensity acoustic sources. Data on the seabed and shallow geological layers is used to inform engineering, layout, and design of infrastructure such as wind turbines and selection of cable corridors.

Geophysical investigations for offshore renewables use different types of equipment and survey methods with much lower sound levels and lower potential for environmental impact.

The most common approaches to reduce impact to marine life is to schedule offshore investigations to avoid times when interactions are likely to be high, keep vessels at low speed, and maintain trained marine fauna observers throughout the investigation.

Timeframe for a typical offshore wind farm development

