

How we bring offshore wind power to shore

Learn how electricity generated at sea is brought to land so that it can be used to power homes and businesses.

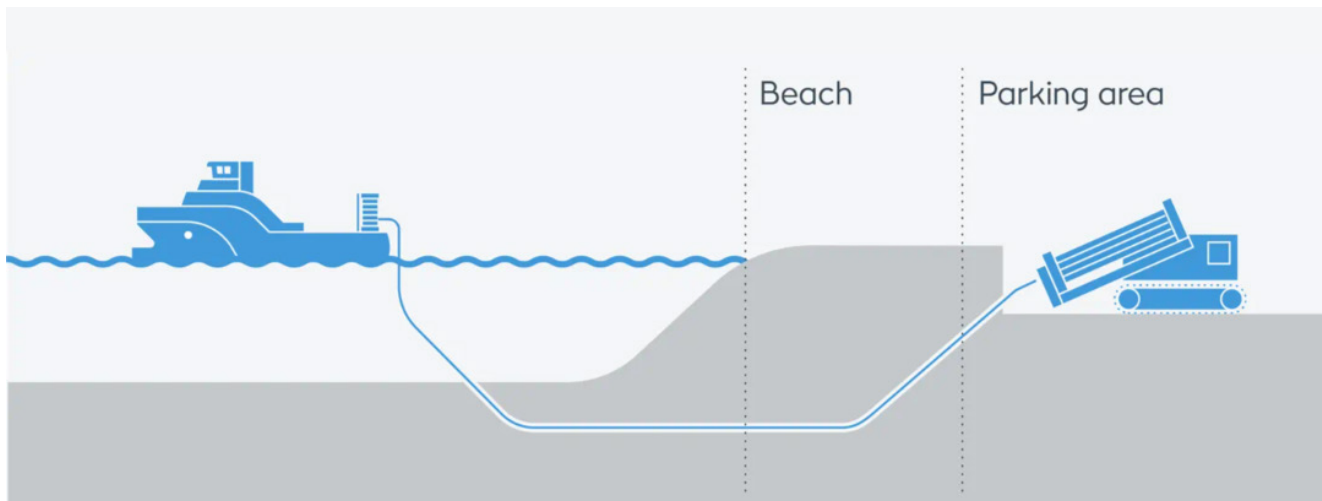
Making landfall

Landfall refers to the point at which the cables carrying power from an offshore wind farm reach the shore. This is where the offshore and onshore infrastructure is connected – an important step in bringing renewable wind energy into the power grid.

It takes about two years to construct the four stages of landfall outlined on this page.

Step 1

From sea to shore



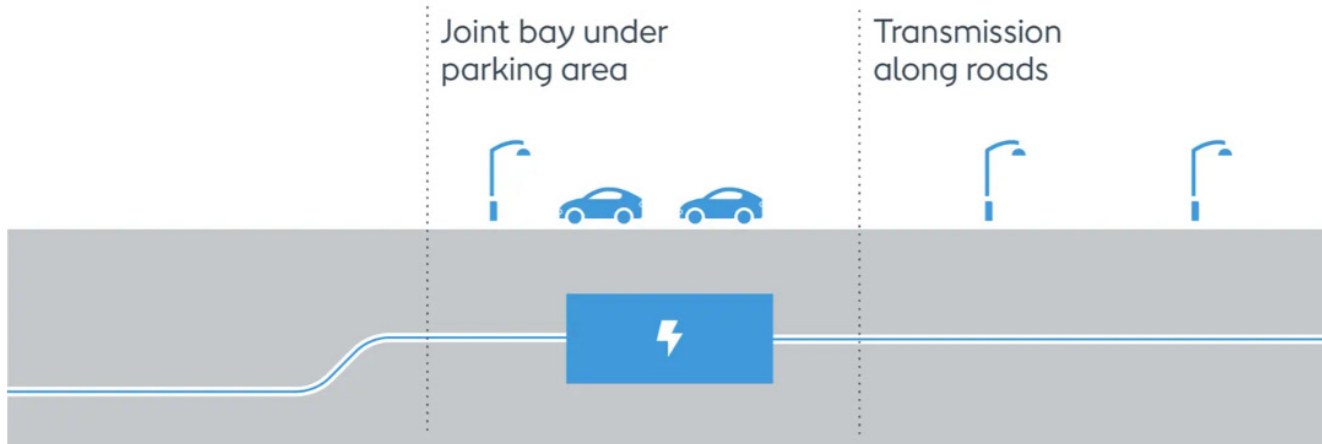
The first stage of making landfall is for a cable to run from the seafloor to a location a short distance inland. To put this cable in place, a hole is drilled using a technique called horizontal directional drilling.

The hole starts in a small pit behind the dunes or a beach, and is then bored using a drill rig machine. Drilling can be measured and controlled precisely, keeping it well below the surface until the drill head emerges from the seabed half a mile to a mile out to sea.

The drill head is then pulled back through the hole, bringing with it a pipe from a cable installation vessel. After this, a cable can be fed through the pipe, establishing a safe path for the wind energy to be brought ashore.

Step 2

The transition joint bay



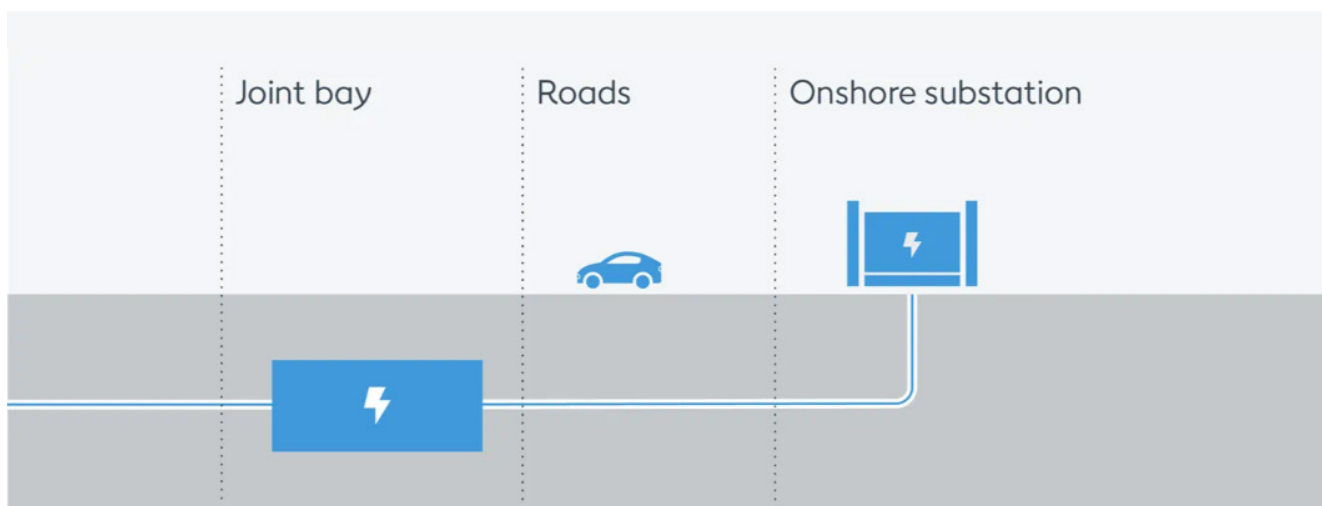
The site of the drilling pit becomes the home of the transition joint bay. This is an underground concrete box where the cable from under the beach joins a cable leading to the onshore substation further inland.

The transition joint bay is usually constructed in a parking lot, both for ease of access, and so as not to cause any damage to the natural environment.

Since it's housed underground, the transition joint bay is basically invisible once constructed, except for some manhole covers in case access is needed in future. We always return the parking lot to the same or better condition than we found it in, so any disruption during construction is only temporary.

Step 3

Underground transmission to the substation



From the transition joint bay, a cable runs underground to a substation. Depending on the location of the substation, the underground transmission line could be several miles long. Like other utility pipes and cables, it tends to run lengthways underneath a road.

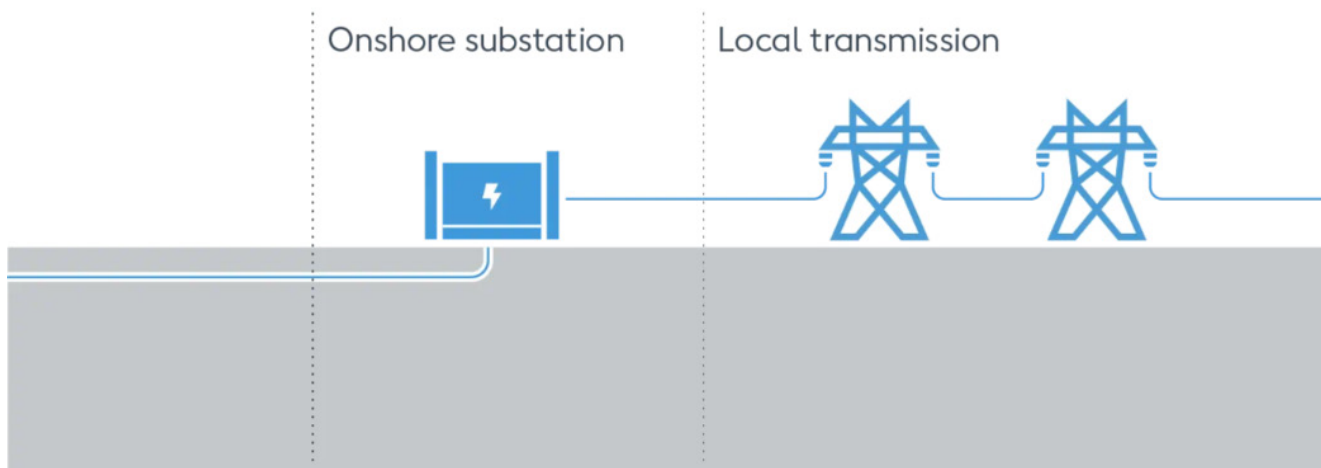
This means digging a trench where pipes will be laid, encasing it in concrete, and pulling cables through the pipes. The road is then returned to its original condition or better. As with the transition joint bay, the only visible evidence of the underground transition line after construction is manhole covers.

During construction, we work with highway authorities to limit disruption to traffic, residents and businesses, keeping as much of the road open as possible, as well as access to properties. We also take measures to minimize dust, mud, debris and site traffic.

Additionally, onshore construction is halted during local tourism seasons to avoid

Step 4

Connecting to the grid at the substation



The final stage in getting renewable power from the offshore wind farm to the distribution grid is the substation. This is where the physical connection is located, and where the current is converted to the right voltage and frequency to be fed into the grid.

The substation is the only above-ground piece of new infrastructure related to landfall, so its location must be chosen very carefully to minimize any impact on nature and on those who own and use the land. To help make this decision, we undertake extensive environmental, technical and feasibility surveys, and ongoing consultations with landowners, statutory bodies and local communities. We also undertake surveys after construction to identify any noise impacts and then take necessary measures to limit them.

Substations can vary significantly in type, size and layout. Typically, a substation site will occupy an area of six to nine acres, consisting of between two and eight buildings, up to 50 feet in height. The site includes associated roads, fences and landscaping, and may include an open yard as well as buildings.