

## Offshore Key Infrastructure

The offshore infrastructure includes floating wind turbines, cables that connect the turbines together, offshore platforms, and cables that transmit the power generated to shore.

### The offshore infrastructure

The electricity generated by our floating wind turbines will be transmitted by cables to the onshore infrastructure substation site and the national grid.

We are reviewing options for the electricity transmission, including High Voltage Alternative Current (HVAC) and High Voltage Direct Current (HVDC) transmission technologies, or a combination of both.

The turbines will generate AC electricity - the same type distributed by the national grid. Due to the long distance of the cables, it is more effective to convert the AC transmission to DC transmission as DC cables have lower electrical losses. The electricity is converted back to AC at a converter substation onshore.

The infrastructure required for both options is broadly similar, but HVDC will require an offshore converter station. HVAC requires an offshore platform for equipment to stabilise the voltage of the electricity generated.

### The floating wind turbines

Turbine technology is advancing quickly so we have not chosen the turbine models yet, but we expect each turbine to produce up to 25 megawatts (MW) of power.

Depending on the size of the turbines, which could have a blade tip height of up to 350, the windfarm is expected to have between 126 and 225 turbines.

Each turbine will sit on a floating unit, held in place by a mooring and anchoring system. These could be catenary, taut line or semi-taut moorings.

Catenary moorings are more slack than other options, which is good for areas where the water depth changes but this option can affect the seabed more. Taut line moorings have the tightest mooring lines which is good for stabilising the turbine. Semi taut moorings are a combination of both. Decisions on the most appropriate option will take place once the project has further developed.

### Offshore platforms and substations

Onshore platforms are required to house electrical infrastructure and for connecting the cables between the turbines with the cables that will transmit electricity to shore.

If HVAC technology is used, equipment to support transmission may be required on offshore structures midway between the windfarm site and landfall, which is where the cables come onshore. An accommodation platform may also be required for staff.

### Offshore cables

Cables will transmit electricity from the windfarm site to the onshore substation and then the national grid. The cables will be buried 1-2m (were possible) below the seabed. In the few areas where the cables can not be buried, other protective measures, such as concrete mattresses or rock berms (a layer of fragmented rocks laid over the cables) will be used to protect them.

