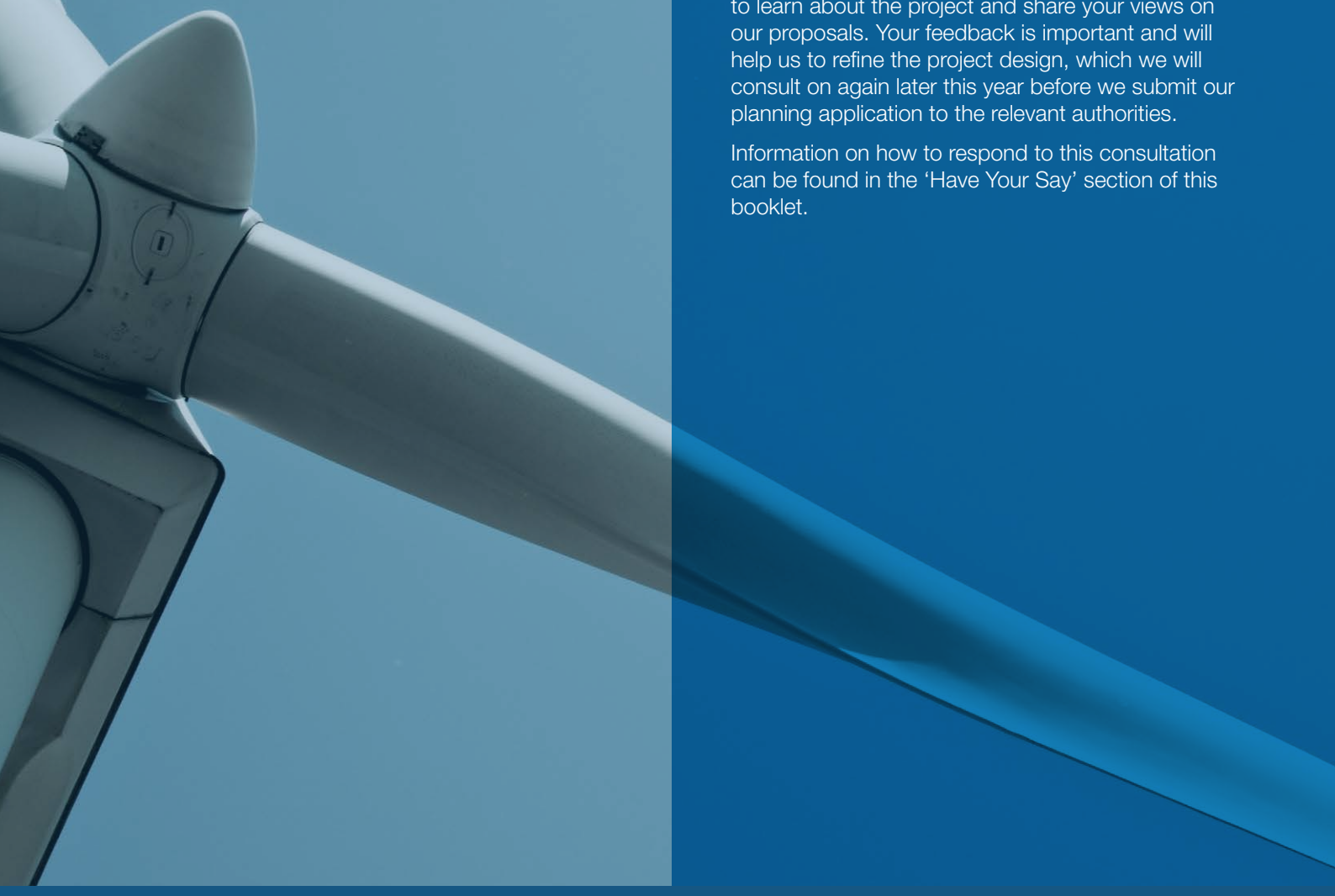
MarramWind

MarramWind Offshore Windfarm

Consultation Booklet

2024

Contents



Welcome

MarramWind is a proposed floating offshore windfarm located off the north-east coast of Aberdeenshire. This exciting project, one of the first commercial floating offshore windfarms in the world, has the potential to deliver up to 3 gigawatts (GW) of clean, renewable electricity, which could power the equivalent of more than 3.5 million homes.

In January 2022, Crown Estate Scotland awarded ScottishPower and Shell an Option to Lease Agreement for the MarramWind offshore windfarm, and since then we have been developing our proposals. We are now undertaking our first round of statutory consultation, an important milestone in the preparations for our Environmental Impact Assessment (EIA) and necessary permits and consents that we intend to submit in 2025. We invite you to read through this information booklet to learn about the project and share your views on our proposals. Your feedback is important and will help us to refine the project design, which we will consult on again later this year before we submit our planning application to the relevant authorities.

Information on how to respond to this consultation can be found in the ‘Have Your Say’ section of this booklet.

Working Together for a Cleaner Future

ScottishPower and Shell have over 70 years' combined experience in Scotland's offshore environment, including another 50 years' experience offshore in the North Sea. We also have over 15 years of combined experience in floating offshore wind energy.

As world-leading energy developers, we bring together decades of experience working offshore, a long history of working in Scotland, and an innovative approach to delivering offshore energy projects.

About ScottishPower

ScottishPower is part of Iberdrola Group, a global energy leader and the number-one producer of wind energy. Responsible for progressing Iberdrola Group's renewable energy projects in the UK, ScottishPower manages the development, construction and operation of windfarms throughout the world and currently has over 40 operational windfarm sites generating over 3 gigawatts (GW) of renewable energy.

ScottishPower continues to be one of the leading renewables developers in the UK and is investing almost £3 billion between 2023-25 across offshore and onshore wind and solar generation, increasing home grown green electricity generation in the UK to support energy security.

ScottishPower is the first integrated energy company to generate 100% green electricity in the UK. Focused on wind energy, smart grids and driving the change to a cleaner, greener future, ScottishPower is investing over £8m every working day to make that happen.

About Shell

Shell has over 50 years of experience delivering complex offshore projects in the North Sea, and today employs around 1,200 in the North-East of Scotland. Floating wind is a natural extension of our capabilities in deeper offshore projects.

Shell today has more than 2.1GW of offshore wind capacity in operation and under construction across Europe, North America and Asia. Globally, Shell is building an integrated power business that will provide customers with low-carbon and renewable energy solutions.

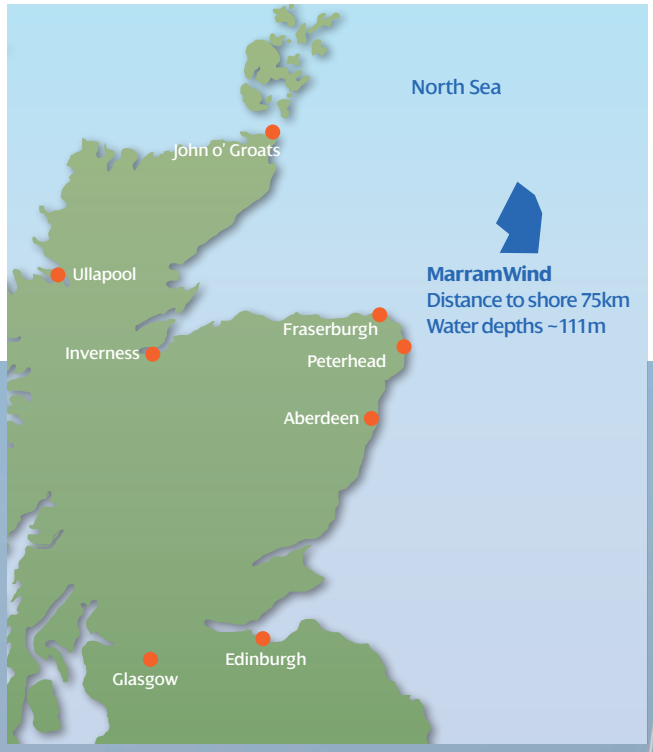
Shell's target is to become a net zero emissions energy business by 2050.

The project hosted a public information day in May 2023 to share information on the proposals with stakeholders at this early stage of the project's development.

About MarramWind Offshore Windfarm

The proposed MarramWind Offshore Windfarm will consist of floating wind turbines. Situated in deep waters approximately 75km off the north-east coast of Scotland at its nearest point, the turbines will be barely visible from shore.

The renewable electricity generated by MarramWind will play a pivotal role in achieving Scottish and UK net zero targets for 2045 and 2050, while also supporting energy security and promoting energy innovation.



MarramWind is being developed with sustainability embedded as a core value throughout the full project lifecycle, from development through to construction, operation and maintenance, and decommissioning. We are adopting a strategic approach, reflective of ScottishPower and Shell's sustainability targets and applicable policies. We have identified four sustainability key priority areas:

1. **Emissions Reduction:** we are committed to minimising, monitoring and measuring our greenhouse gas emissions where feasible.
2. **Embedding Circularity:** our ambition is to utilise resources and materials efficiently and optimise reuse and recycling across the project lifecycle.
3. **Nature Positive Development:** we are committed to ensuring negative effects on biodiversity are avoided and mitigated and that the project has an overall positive benefit on biodiversity.
4. **Optimising Social and Economic Performance:** we will seek to maximise the project's net economic effect and support local and regional economic priorities where feasible, including employment and skills development and associated business and supply chain opportunities.

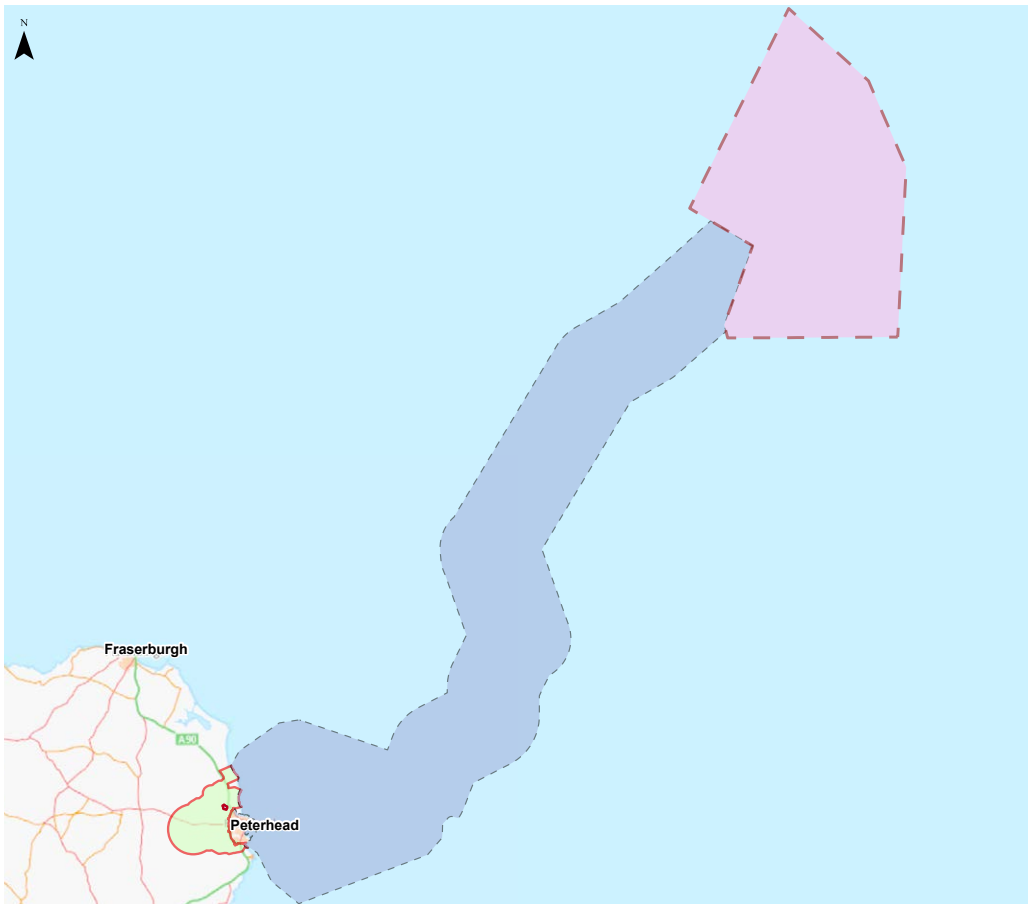
We are adopting a holistic approach to sustainability, with all key priorities considered together. For each key priority area, we are reviewing options for enhancing sustainability, including exploring existing design options, new technologies and partnership opportunities. We will undertake studies to further explore and select which options can be taken forward. By adopting this approach, MarramWind will strive for an optimised sustainability performance that will benefit the environment and local communities.

For illustrative purposes only. The turbines used on MarramWind will have a different appearance at the water's surface.

MarramWind has defined a boundary area, shown in the map below. This does not show the final area the project will require for construction and operations. However, at this stage of the project's development it allows us to work across a larger area to identify the best locations for the project's infrastructure. It also ensures we can make adjustments in the project design that may arise through our design development, environmental assessments, and stakeholder feedback.

The MarramWind project, generating 3GW of offshore wind power, will connect the first 1.5GW of offshore wind power to the National Grid via the proposed Scottish and Southern Electricity Network's (SSEN) Netherton Hub substation to the west of Peterhead. This was confirmed by National Grid in their 2022 Holistic Network Design (HND) report. In March 2024, it was also announced as part of a HND follow-up exercise that the remaining 1.5GW will also connect to the Netherton Hub substation. While the HND is a crucial step for renewable energy connection, it is part of a larger picture. The Beyond 2030 Report builds on the HND, aiming for a clean, secure, and affordable energy future throughout the 2030s. This ambitious plan aligns with the Climate Change Committee's targets and Scotland's ScotWind leasing round.

For illustrative purposes only. The turbines used on MarramWind will have a different appearance at the water's surface.



Map showing project area boundary for consultation

Consents and Project Programme

The consenting process

Under the Scottish Government's National Planning Framework 4, MarramWind is classified as a National Development. This means that whilst the need for the project has been established through Government policy, planning permission, marine licences and other consents or licences are still required for construction and operation activities. We will therefore need to make separate applications for the following key consents for both the onshore and offshore elements of the project:

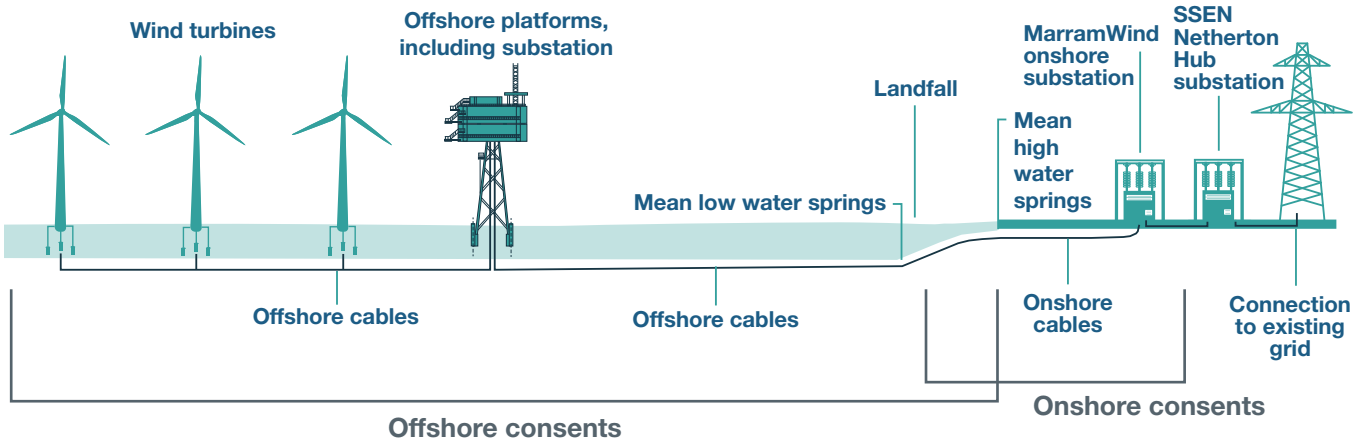
- **Section 36 consent,** under the Electricity Act 1989 (S36) is required for the development. Permission is granted by the Marine Directorate (on behalf of Scottish Ministers);
- **Marine Licences** are required for works undertaken below the average level of high tide (known as Mean High Water Springs (MHWS)) to undertake marine licensable activities, including the installation of cables or other infrastructure on or within the seabed, such as cable protection measures, mooring line and anchors for the floating wind turbines and other infrastructure. Permission is granted by the Marine Directorate (on behalf of Scottish Ministers);
- **Onshore planning permission**, under the Town and Country Planning (Scotland) Act 1997 (TCPA) is required for all infrastructure located above the average level of low tide (known as Mean Low Water Springs (MLWS)) and is granted by the local planning authority, Aberdeenshire Council.

Some consents and licences overlap between the MHWS and MLWS – this area is known as the intertidal zone.

This consultation presents the project as a whole, including onshore, intertidal and offshore infrastructure. This consultation, and the events we are hosting within the consultation period, are being delivered in line with the specific consultation requirements for the onshore planning application under the TCPA and S36 consenting requirements. We will be holding a second consultation later this year that will further fulfil the consultation requirements set out by the TCPA and S36, as well as the consultation requirements for the relevant Marine Licences. The second consultation will be another opportunity for you to view our updated proposals and comment on a more refined project design.

We will also be undertaking an EIA, which is the process of assessing the likely significant effects the project could have on the environment. In addition, we will prepare reporting to support a Habitats Regulations Appraisal (HRA). Further information on our EIA and HRA can be found in the 'Environmental Impact Assessment' and 'Habitats Regulations Appraisal' sections of this booklet.

The diagram below shows the infrastructure required for the onshore and offshore elements of MarramWind, as well as which sections of the project are related to the different consents we need to apply for. Further information on the onshore and offshore infrastructure is provided in the following sections.



Project programme

Developing MarramWind involves significant work, but our priority is to deliver a project that minimises effects on local communities and the environment, while delivering clean, renewable energy. The programme below sets out the process and anticipated timeline towards developing MarramWind.

2022

ScottishPower and Shell were awarded rights to develop MarramWind offshore windfarm as part of Crown Estate Scotland's ScotWind Leasing.

Environmental surveys and data gathering commenced in the marine and terrestrial environments to inform the EIA and project design.

MarramWind commits to providing £25 million via a stimulus fund to benefit the Scottish supply chain to develop the infrastructure and facilities needed for the construction of ScotWind projects.

2023

The MarramWind Scoping Report was submitted to Aberdeenshire Council and the Marine Directorate, with responses received from key environmental stakeholders (known as a Scoping Opinion). Aberdeenshire Council and the Marine Directorate (on behalf of Scottish Ministers) are the consenting bodies who will decide on granting permission for the construction and operation of MarramWind. The Scoping Report is available on the project's website www.marramwind.co.uk.

A Public Drop-In-Day event was held in Peterhead for members of the public and stakeholders to come and learn about the project and meet the project team. A second event was held for businesses and suppliers to find out how they could be a part of the supply chain developing MarramWind, in turn helping support local and regional jobs and the economy.

2024

Two rounds of public consultation will be held, each including public events, providing stakeholders with opportunities to view and feedback on the project proposals during the development stage.

2025

Submission of necessary applications and consents to the consenting authorities: Aberdeenshire Council and the Marine Directorate.

2026

Anticipated planning decision and various permissions to be made for the offshore and onshore consents.

Late 2020s

Construction anticipated to commence.

2030s

MarramWind will become operational.

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

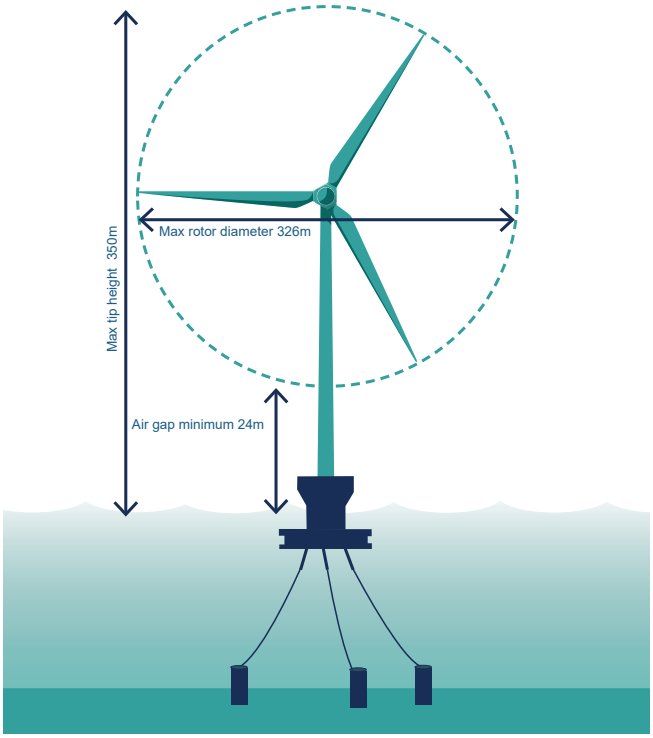
The electricity generated by our floating wind turbines will be transmitted by cables to the shore where they will connect to the onshore infrastructure and continue to a substation site and ultimately the national grid.

We are currently reviewing different options for the transmission of the electricity generated by the offshore windfarm. These include High Voltage Alternating Current (HVAC) and High Voltage Direct Current (HVDC) transmission technologies, or a combination of the two.

The wind turbines will generate AC electricity, which is also the electricity type distributed by the national grid. It is common for offshore windfarms relatively close to shore to transmit electricity using AC transmission. As the transmission distances get longer, the electrical losses increase. At a certain point, it becomes more effective to convert the AC transmission to DC transmission as DC cables do not experience electrical losses of the same magnitude as AC cables. The electricity is then converted back to AC at a converter substation onshore.

The infrastructure required for all of the options is broadly similar, but HVDC transmission requires specific equipment for converting Alternating Current (AC) to Direct Current (DC) electricity. This is done using an offshore convertor station before being converted back to AC at an onshore convertor station. The electricity is then connected to the national grid. HVAC transmission requires an additional offshore platform to house electrical equipment needed to stabilise the voltage of the electricity generated.

Other differences include the number and size of the cables and substations needed to deliver power to the national grid.



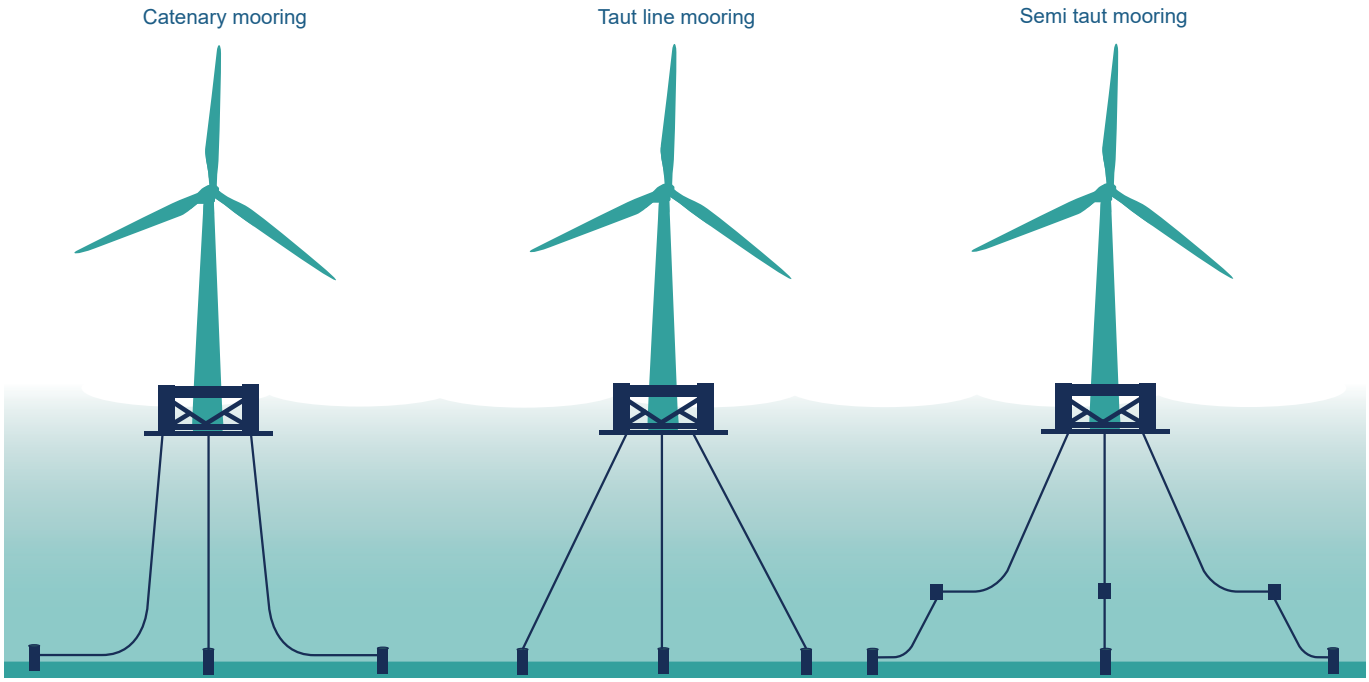
The floating wind turbines

The turbines have not yet been selected because turbine technology is advancing quickly and the models available at the time of construction will be more powerful and efficient than those available today. It is currently proposed that each turbine will individually have the capacity to produce up to 25 megawatts (MW) of power.

Depending on the final size of the turbines, the windfarm is expected to have between 126 and 225 turbines. Each turbine could have a blade tip height up to 350m high but as the windfarm will be located approximately 75km offshore at its nearest point, they will be barely visible from shore.

Each wind turbine will sit on a floating unit that will be held in place by a mooring and anchoring system. The design of the mooring and anchoring system will depend on the type of wind turbine and floating platform used.

The mooring options currently being explored are catenary mooring, taut line mooring and semi-taut mooring.



Catenary moorings are more slack than other options, which make them suitable for areas where the water depth changes e.g. due to low or high tides. However, this option may involve the moorings resting directly on the seabed.

Taut line moorings are the tightest mooring lines. They take up less seafloor space and are better at keeping the wind turbine stable.

Semi taut moorings are a combination of the taut mooring system and catenary mooring system. This option has shorter mooring lines and requires less seafloor space than the catenary system.

Decisions on the most appropriate anchoring and mooring solutions are yet to be made as product development is advancing quickly and the future supply chain at the time of construction will have moved on from current product availability. Further information on the options being considered will be available in our EIA. The chosen mooring system will comply with regulations, including navigational safety, and consider effects on the seabed and marine life.

Offshore platforms and substations

Offshore platforms will be necessary within the windfarm site to house electrical infrastructure, such as substation equipment or controls, and operational systems. It is at these offshore platforms that the cables connecting the floating turbines connect to the cables that will transmit electricity to shore. The number of substations required for MarramWind will depend on whether the project chooses HVAC or HVDC technology (or a combination of both), and the layout of the windfarm site. A separate accommodation platform may be considered as lodgings for offshore staff.

If HVAC technology is used, the length of the offshore cable route may require the installation of additional equipment to support transmission. This equipment will be located on offshore structures located at the approximate mid-point between the windfarm site and where the cables make landfall, which is where the cables come onshore. It is unlikley these will be visible from shore.

Offshore cables

Electricity will be transmitted through offshore cables that connect the offshore windfarm with the onshore substation and subsequently the national grid. The voltage, number and size of the cables required will depend on whether HVAC or HVDC technology (or a combination of both) is used.

The cables will be protected by burying them typically 1-2m (where possible) below the seabed for most of their length to landfall. In the few areas where cable protection cannot be achieved by cable burial, other alternative methods, such as concrete mattresses or rock berms (a layer of fragmented rocks laid over the cables), will be used to protect them.

Offshore Project Overview

The windfarm site is 684km^2, within which the actual windfarm will be located. The windfarm and the placing of the floating turbines will be determined by detailed survey works. The water depths in this area range between 87m and 134m.

Cable corridor route selection and surveys

Throughout the development, multiple surveys have been, and will be, undertaken to determine the final offshore cable route and sites for infrastructure, with consideration given to the local environment, geology, and commercial activities.

At this point of the development, we have identified an offshore cable corridor from the windfarm site, within which the final cable route will be located. While the cable corridor being considered is currently 1-2km wide along most of its length, the final cable route will be much narrower and will be determined by further design work. The cable route will connect to the chosen landfall location(s) when it comes ashore, which may mean it splits into multiple cable route branches (shown in light pink on the map overleaf) depending on which and how many landfall locations are chosen. These cable routes have been shared with the fishing community and were surveyed in 2023 to understand their suitability. An additional nearshore route option has also been identified (shown in orange on the map overleaf) to allow a degree of design flexibility in an area where offshore constraints are limiting the accessibility of some of the landfall locations. The number of landfall locations required will depend on the transmission technology selected and the associated number of cables required to transmit the electricity to land, as well as land availability. This will be determined as we work towards a final design.

Different constraints are being considered in the planning of the offshore cable route and infrastructure, including local wildlife, natural habitats, geology, commercial fishing and shipping activities. Further information on the constraints and site selection process can be found in section 2.4 of the MarramWind Scoping Report available at www.marramwind.co.uk.

Surveys of the offshore geology and environment have been conducted along the cable corridor to understand the seabed conditions and marine habitats. The data is currently being analysed and will help identify any local sensitivities, with further information being presented in the EIA.

Landfall locations

An initial search area for the landfall site(s) extended from Troup Head in the north to Black Dog Beach in the south. This stretch of coast provided a range of options for landfall sites, while minimising the length of the cable corridor and reducing potential environmental effects and technical issues.

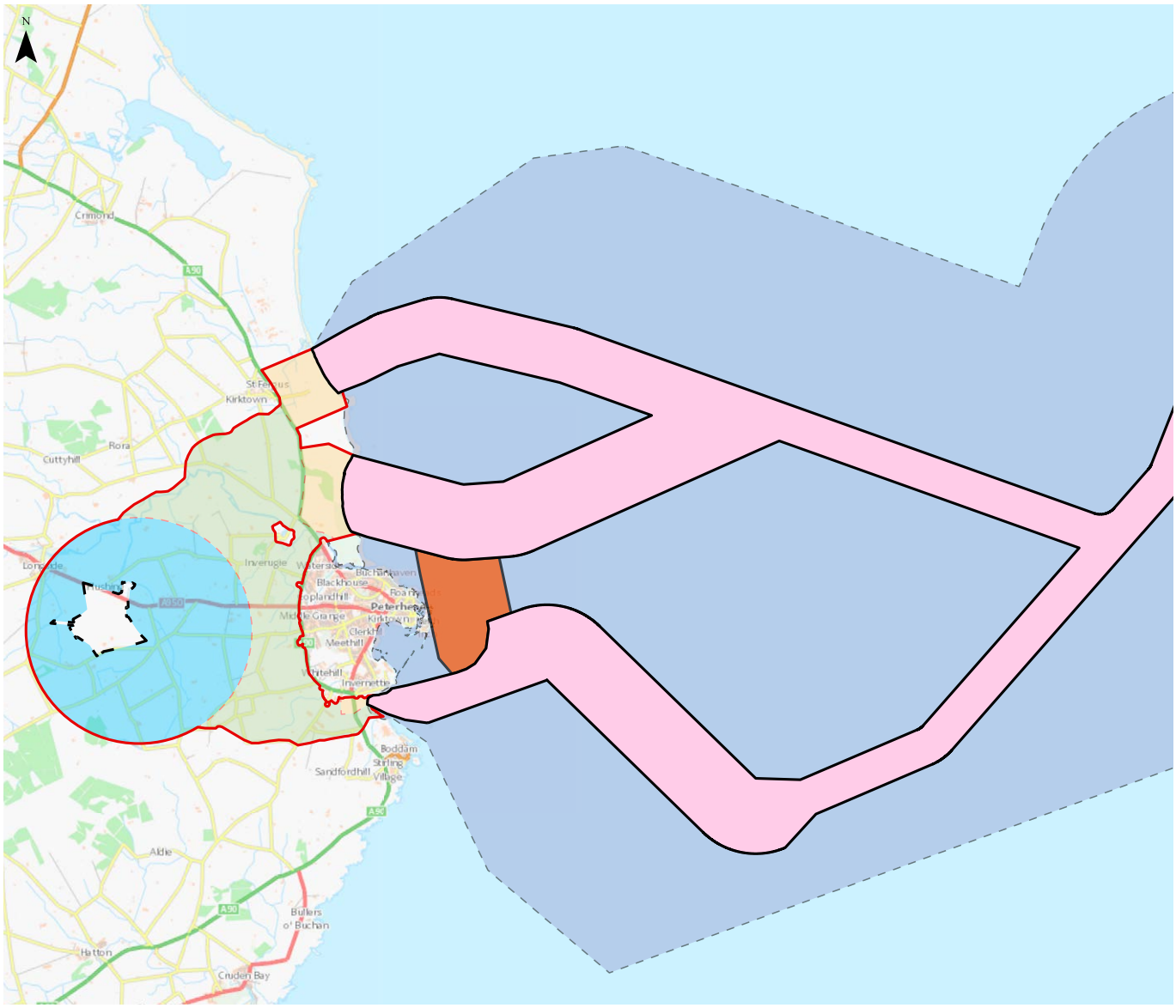
The constraints at the different landfall locations were assessed and key environmental and technical information was reviewed to refine the search area and avoid sensitive areas, such as residential and ecological habitat areas. This narrowed down the search area to the stretch of coast between Sandhaven on the north coast (west of Fraserburgh) to Sandford Bay (south of Peterhead).

Following confirmation of the onshore grid connection point to SSEN's Netherton Hub substation to the west of Peterhead, environmental and technical appraisals of the potential landfall sites were undertaken. This has enabled us to narrow down up to three potential areas where landfall sites could be located:

- Scotstown Beach, south of St Fergus Gas Terminal and north of Peterhead
- Lunderton, north of Peterhead
- Sandford Bay, south of Peterhead

It is possible that more than one of these landfall locations will be taken forward as part of the project design. This is because the project must ensure that there is adequate space for the necessary cables to be brought ashore, as well as for the onshore infrastructure required for the onward power transmission, such as construction compounds. Within the chosen landfall location(s), a more refined landfall site will be identified where the offshore cables come onshore. These decisions will depend on engineering and environmental considerations and technical surveys, stakeholder engagement, the location of other developments, the cable route itself and the onshore substation location.

We are seeking your feedback on the offshore elements and landfall locations of our proposals. Please see questions in the Offshore and Landfall(s) sections of the feedback form to submit your views.



Map of potential offshore cable corridors and landfall zones

Onshore Key Infrastructure

The onshore infrastructure includes a substation and onshore cables. The onshore cables run from the landfall site(s) to the onshore substation and subsequently to the point of connection at the SSEN Netherton Hub substation.

Onshore cables

The cables will be laid underground within a cable corridor surrounded by a wider, temporary corridor for construction works. Any land disturbed during construction will be reinstated once the cables are installed. It is expected that the width of these temporary corridors will be approximately 150m, but could occasionally be narrowed to avoid obstacles, such as buildings or natural features, or restricted land or to reduce any environmental effects. There may be some locations where the corridor is widened to allow sufficient space for access, avoidance of obstacles and certain construction requirements.

Points of access will be required for maintenance of the cables during operation.

Onshore substation

The onshore substation is a key part of the project's transmission system. This is the point where the voltage level of the electricity generated by MarramWind is transformed to the voltage level required for the national grid.

The onshore substation infrastructure will comprise of outdoor and/or indoor high voltage electrical equipment (e.g. transformers, switchgear and, if necessary, equipment to convert HVDC into HVAC).

A transformer is electrical equipment that helps change the level of electricity voltage. Switchgear is electrical equipment that helps connect and disconnect the circuits from the electricity network.

Indoor equipment will be installed in a warehouse style building or several smaller buildings. Work is ongoing to identify the best technical and environmental solutions, which will determine final equipment requirements and the size of the substation.

The permanent operational footprint of the substation and associated buildings could be up to 16ha. A temporary construction area of up to 4ha will also be required.

Subject to the design of the onshore substation, additional land will be required for drainage, environmental mitigation and landscaping.

Grid connection cables

These are the underground cables that connect from the project's onshore substation to SSEN's Netherton Hub substation. SSEN's Netherton Hub substation does not form part of the MarramWind planning application. SSEN is progressing a separate planning application for their substation, with information available on their website www.ssen-transmission.co.uk.

Cable installation on the East Anglia Hub

Onshore Project Overview

We are carrying out work to identify the onshore cable corridor(s) and site for our onshore substation within the project boundary area, as shown on the map. We are engaging closely with technical stakeholders, such as the Scottish Environment Protection Agency (SEPA), Historic Environment Scotland, NatureScot and Aberdeenshire Council to understand the potential effects from MarramWind's construction and operation on the local area and what we can do to avoid or reduce these.

The onshore cable corridor

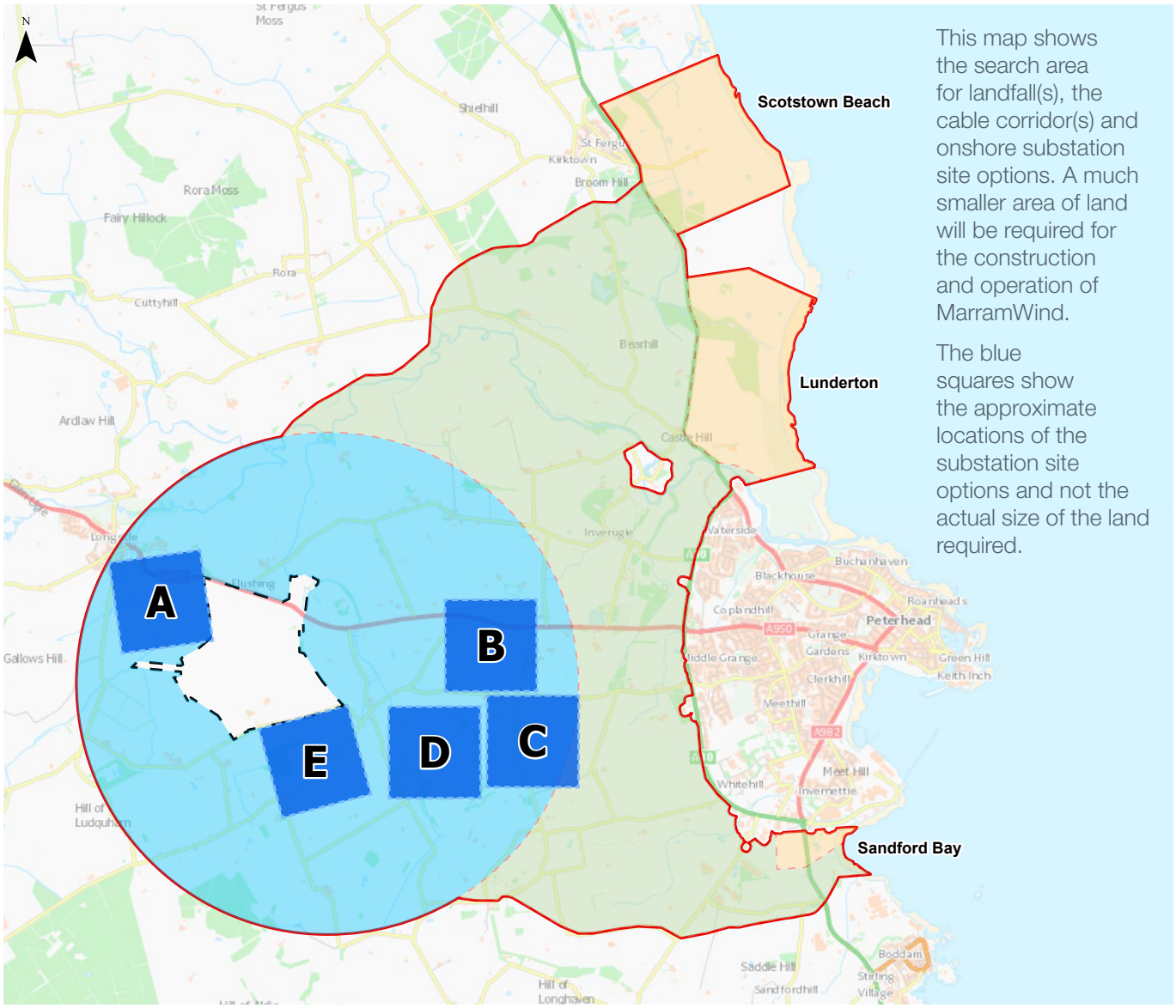
To identify an onshore cable corridor(s), we have been mapping and assessing local environmental and technical constraints. We are now looking at where our preferred cable corridor(s) will be located within the search areas (shown in green on the map opposite), ultimately connecting the chosen landfall site(s) and the SSEN Netherton Hub substation, via the project substation site. The final onshore cable corridor(s) will be decided based on the results of our environmental assessments, technical constraints and stakeholder feedback.

The substation location

Following environmental assessments and review of technical considerations, we have narrowed down the substation site to five options (shown by the dark blue squares on the map opposite). These are all located within a 3km search area (shown in light blue on the map opposite) from SSEN's proposed Netherton Hub substation site, into which MarramWind will connect. This is considered a sufficient area in which to locate our substation as it is close to the grid connection point, which will ensure reliable and safe electricity transmission to the national grid. The actual land required for the substation will be smaller in size than shown by the dark blue squares shown. The onshore cable corridor connecting the onshore substation to SSEN's Netherton Hub substation will fall within the area shown in light blue on the map. The selection of this corridor will follow the same process as the onshore cable corridor(s) from the landfall site(s) to the substation.

The next step will be for us to identify a preferred substation site through our environmental and technical assessments and stakeholder engagement, with sufficient space for its construction and operation.

We are seeking your feedback on the onshore elements of our proposals. Please see questions in the Onshore section of the feedback form to submit your views.



This map shows the search area for landfall(s), the cable corridor(s) and onshore substation site options. A much smaller area of land will be required for the construction and operation of MarramWind.

The blue squares show the approximate locations of the substation site options and not the actual size of the land required.

Map showing onshore project area boundary for consultation

- Proposal of Application Notice Boundary
- Landfall Search Area
- Onshore Cable Corridor Search Area
- Onshore Substation Search Area
- SSEN Netherton Hub Site Boundary
- Potential Substation Site Area
- **Substation Site Area**
- **Actual Site Size**

0 500 1,000 1,500 2,000 2,500 Meters

How Will MarramWind Be Built?

Given the scale of the project, the potential availability of technology and service providers, and the likely timing of capacity at the point of grid connection, the construction of MarramWind may involve phased installations of both onshore and offshore infrastructure for the duration of the full construction period. This will be confirmed as the project progresses. How the project will be built is set out below.

Offshore

Installing the offshore cables

Before the installation of any offshore cables, the seabed will be prepared and cleared of obstacles, such as debris and boulders. The offshore cables will then be laid by cable laying vessels in sections and joined together. The cable laying vessels will bury the cables 1-2m beneath the seabed wherever possible. Burial protects the cables from damage, with other protection methods such as concrete mattresses or rock berms used where burial is not possible.

Wind turbine installation

The wind turbines may be transported to the windfarm site as separate components to be installed on site or pre-assembled and towed to site, but the construction methods and assembly location are yet to be determined. Ports with adequate capacity to support the installation work will be required but are not yet confirmed.

Offshore platforms and substations

The foundations for offshore platforms and substations will be built near to a port and transported to site for installation. Once the foundations are installed to the seabed, the offshore platforms and substations can then be lifted into place.

Landfall

How the project is constructed will depend on the landfall site(s) chosen, features of the coastline and other technical or environmental constraints.

The onshore part of the landfall site(s) will include joint bays where the offshore and onshore cables are joined together. The joint bays are typically concrete-lined pits within which different sections of cables are joined together.

Access to landfall construction site(s) may require temporary access routes and/or the strengthening of existing roadways. A temporary construction compound(s) will also be required in the area, but its location is to be determined.

The cables at the landfall site(s) will be buried and installed either by open cut construction or by Horizontal Directional Drilling (HDD). Open cut will involve digging a trench through the intertidal zone and laying the cables either directly into the trench or within a duct. The trench will then be backfilled with the excavated material.

The HDD method will not require the digging of a trench. Instead, a duct(s) is installed by drilling horizontally through the ground from an entry point onshore to an exit point offshore. The cables are then pulled through the duct without disturbing the surface.

A decision has not yet been reached on the preferred solution, which will be dependent upon further design work and local conditions.

Onshore

Installing the onshore cables

The onshore cables will be installed by digging a trench and subsequently laying the cables directly into the trench or installing a duct in the trench through which the cables are then pulled at a later stage. The trench is then backfilled. HDD or other tunnelling methods may be necessary to cross sensitive features such as watercourses and roads.

The onshore cables will be installed in sections, therefore joint bays and link boxes will be required at intervals along the onshore cable corridor. A link box is made up of electrical equipment that ensures the cables are safe and work properly. Access to these link boxes is required to check the cables are working efficiently.

A number of temporary construction sites and compounds will be required along the cable corridor to accommodate construction equipment, building materials, and site offices. Once construction is complete, the land will be reinstated.

Onshore substation infrastructure

Installation of the onshore substation infrastructure will require site preparation works, construction of substation buildings, installation of electrical equipment and landscape mitigation. Site access will be required, therefore an access road(s) will be constructed. A temporary construction compound will be required, but this will be dismantled, and the land reinstated when the substation infrastructure construction work is completed.

Prioritising local benefits

One of our key objectives is to prioritise the use of Scottish ports and harbours for the construction of MarramWind, maximising the economic benefits for Scottish communities. Furthermore, we actively seek collaboration with local suppliers to deliver essential services for the project. This will help to deliver increased local employment, business opportunities and a thriving supply chain, ultimately contributing to a more sustainable and prosperous Scotland.

Our commitment aligns with national policy objectives to provide local socio-economic benefits from renewable energy projects.

MarramWind in Operation

MarramWind is expected to begin generating electricity in the early 2030s.

Operational maintenance

When MarramWind is in operation, periodic testing of the onshore cables is likely to be carried out.

The onshore substation is unlikely to be permanently staffed, although some maintenance and operational visits will be required. Infrequently, equipment may need to be maintained or replaced and HGVs may be used.

For the offshore elements of MarramWind, maintenance requirements will depend on the infrastructure used, depending on the type of wind turbine, floating platforms, electrical transmission infrastructure and final layout of the windfarm.

Maintenance will typically be undertaken via a service operation vessel. Helicopters or other specialised vessels may also be used where necessary to prevent damage to equipment, repair corrosion, and carry out all necessary repairs to maintain safe operation of the windfarm.

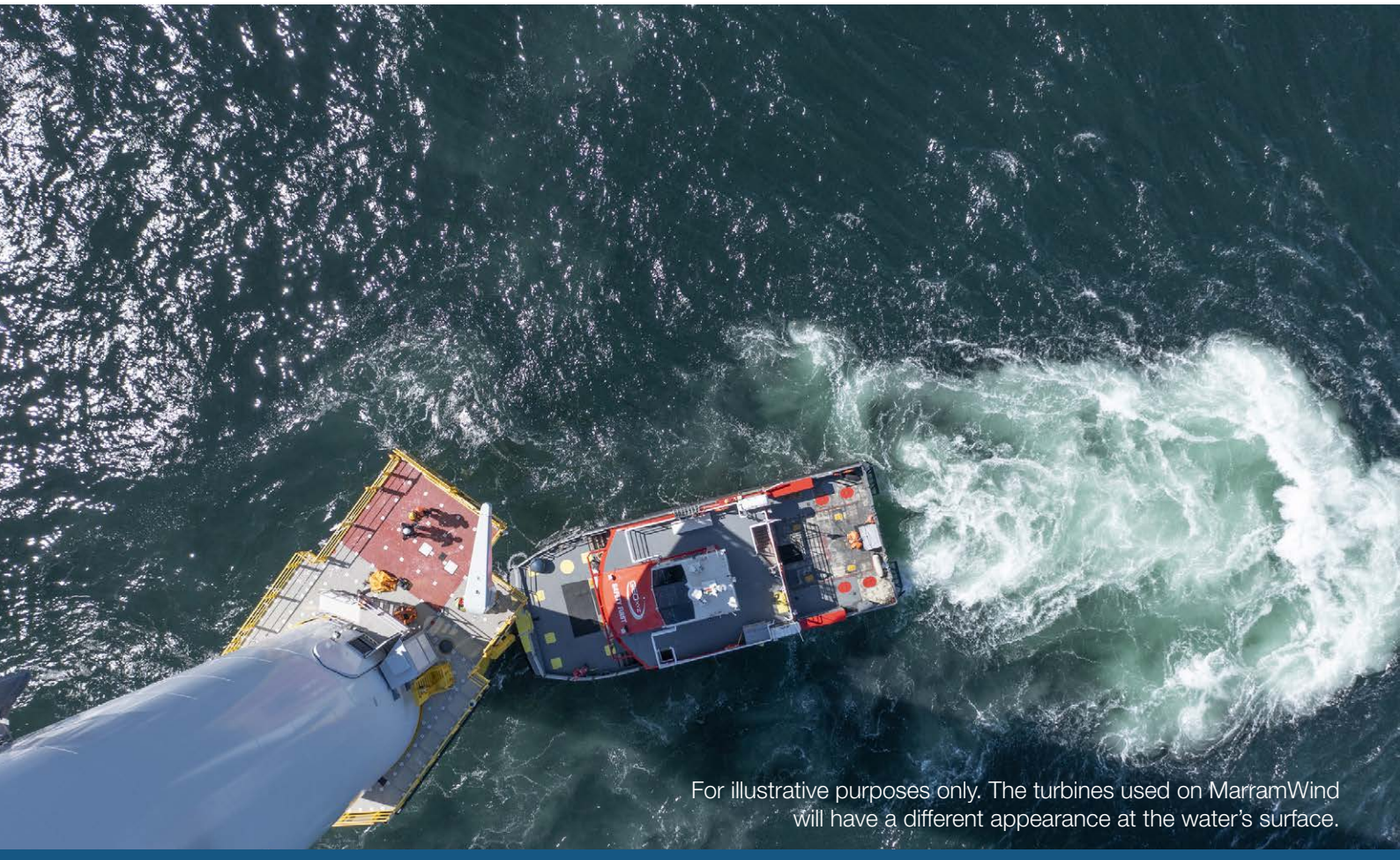
Decommissioning

Decommissioning MarramWind is anticipated to involve the removal of all offshore infrastructure above the seabed. The cables could be removed or left in place to minimise environmental effects and offshore navigational safety risks associated with their removal.

We will develop the project in a sustainable manner and will consider both project operation and decommissioning in the design and development.

The onshore substation is likely to be removed and the site then reinstated.

The decommissioning works are likely to be undertaken in reverse of the construction process of MarramWind. A decommissioning plan and programme will be developed prior to construction and updated during the operational phase of the project to account for any changes to industry best practice, relevant legislation and policy, or developments in technology. This decommissioning plan will be submitted alongside our planning applications to Aberdeenshire Council and the Marine Directorate (on behalf of the Scottish Ministers).



For illustrative purposes only. The turbines used on MarramWind will have a different appearance at the water's surface.

Environmental Impact Assessment

What is an Environmental Impact Assessment?

Before we can build our offshore windfarm, we need to carefully consider the effects it might have on the environment and the local community. To do this, we will be completing a detailed EIA that will be presented within two EIA Reports. One report will focus on onshore infrastructure (including cables and substations on land) and the other will focus on offshore infrastructure (including wind turbines and subsea cables as well as any ancillary equipment).

The EIA will help us understand any potential effects our project might have, and how we can minimise them. This could involve adjusting the layout of the windfarm or using quieter construction methods.

Approach to assessments

In January 2023, we submitted our EIA Scoping Report to Aberdeenshire Council and the Marine Directorate (on behalf of Scottish Ministers), which outlined the environmental assessments that we proposed to undertake to help us understand the potential significant effects from the project. The Council and Scottish Ministers consulted with specialist stakeholders on the Scoping Report, covering various environmental topics and their feedback in their Scoping Opinion has been used to refine our assessment approach. The Scoping Report can be found on the MarramWind website at www.marramwind.co.uk.

We have undertaken an extensive programme of surveys to better understand current environmental conditions. We will provide more information later this year at our second round of statutory consultation, where we will summarise the emerging baseline data findings from the surveys.

Alongside our surveys, we are also engaging with key stakeholders, including government and statutory consultees, on the various assessments we are undertaking (as detailed below). This will help us understand more about the potential effects from the project and to identify possible mitigation measures.

The EIA will assess the likely significant effects of MarramWind for all project phases, including construction, operation and maintenance, and decommissioning. This will inform the siting and design of the onshore and offshore infrastructure. We are considering all potential significant effects to ensure that they are either avoided or mitigated in the project design, where possible.

Full details of the survey work and the EIA assessments, including design mitigation and any additional mitigation measures, will be published in the publicly available EIA Reports that will form part of our submission. The EIA Reports will allow Aberdeenshire Council and Marine Directorate (on behalf of Scottish Ministers), who will consider our applications, to make a well-informed decision on whether the project should be given permission to go ahead.

Offshore marine wildlife and habitats

We have undertaken various offshore surveys and studies to understand local marine wildlife habitats and species that could potentially be affected by the installation of the offshore cables and the windfarm site, including:

- Two years of offshore digital aerial surveys using planes to help us identify and assess potential risks to birds and marine mammals;
- A geophysical and geotechnical survey of the windfarm site and cable corridor to understand the sediment types, seabed features and habitats; and
- A benthic ecology survey of the windfarm site and cable corridor to understand the distribution of species living on and within the seabed.

Further studies to inform the EIA will be undertaken including:

- An underwater noise assessment to understand potential effects to marine mammals and fish from our temporary construction works and operational noise;
- Data analysis on fish and shellfish species including engagement with key stakeholders Marine Directorate (on behalf of Scottish Ministers) and Joint Nature Conservation Committee; and
- Modelling will be carried out to identify changes to sea currents and waves due to the presence of the offshore infrastructure. This will inform the development of an environmentally sensitive project design for MarramWind.

Good practice measures will be followed to minimise potential effects on water quality during construction such as from accidental pollution events from vessels or disturbance of sediment during cable installation. Measures will be described in bespoke environmental management documents, which provide details on how to manage, monitor, control and report any incidents.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Fisheries

Commercial fishing is an important industry for the communities located in the north-east of Scotland. Therefore, we are carefully assessing the potential for the project to affect commercial fishing activities using data analysis and engagement with key fishery organisations. A range of data sources are being analysed, including statistics for fishing catches, spatial vessel monitoring system data and surveillance data to characterise the fishing activity across the area. Commercial fisheries are being assessed on a fleet-by-fleet basis, covering all Scottish fishing vessels and other UK and non-UK fishing vessels active across the MarramWind development area.

We are assessing potential losses or displacement of fishing grounds and activities given the extent of moorings and anchors holding the floating wind turbines in place, as well as potential fishing restrictions during construction. In addition, potential disturbance to fish and shellfish resources are being assessed, as well as a fish and shellfish ecology assessment that analyses effects associated with noise and electro-magnetic fields.

As part of the EIA we will prepare a Fisheries Management and Mitigation Strategy. We will continue engaging with commercial fishery stakeholders via our dedicated Fisheries Liaison Officers to manage the relationship with local fishing communities.

Shipping and navigation

We have carried out vessel traffic surveys during the summer and winter months. These surveys have identified the other maritime users transiting the windfarm site. This will be important information to help us prepare the Navigational Risk Assessment, following the guidance set out by the Maritime and Coastguard Agency. The assessment will present detailed baseline information including vessel traffic survey data. We will be engaging with key stakeholders to understand any potential hazards to users of the sea, including commercial, fishing and recreational vessel operators. The Navigational Risk Assessment will conclude with a list of mitigations that are required to ensure the project is safe for all users.

Onshore wildlife and habitats

Ecological surveys and data collection are being undertaken where onshore infrastructure may be sited. This includes habitat mapping and protected species surveys (e.g. otter, water vole, badger), bat roost checks and riverine fish habitat surveys. A second year of wintering geese and swan surveys has commenced, which will establish their distribution within the wider project area. Survey work is ongoing including further bat and protected species surveys, breeding bird and vegetation surveys.

Ecological surveys being undertaken on site in the project area

Onshore water environment

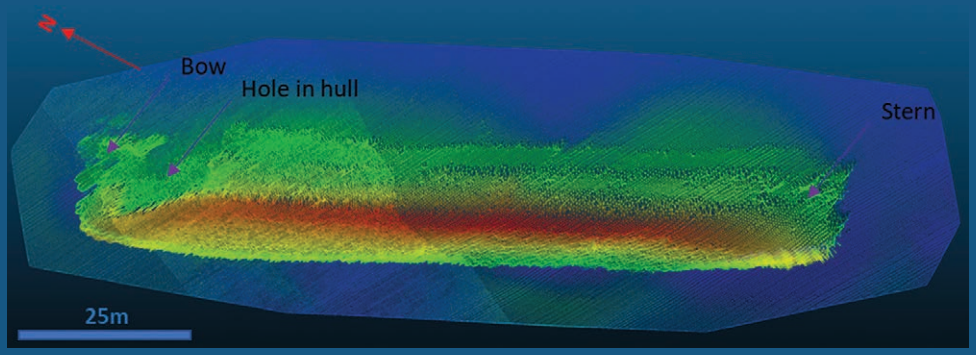
There are various onshore water bodies, such as rivers, ponds and lochs in the area, which could be affected by the project. We are considering all elements of the onshore water environment including aquatic habitats, sources of flood risk (including fluvial, coastal and surface water) and water resources that maybe affected by the project.

We are engaging with the SEPA and Aberdeenshire Council to develop an understanding of the water environment. The EIA will consider potential effects posed towards the onshore water environment including water quality and/or quantity and potential changes in flood risk. Numerous embedded environmental measures, including mitigation by design and good industry practices, will continue to be put forward as part of the water environment assessments to mitigate potential effects.

An underwater discovery

On 2 June 2022, as part of MarramWind's offshore site investigations, an unexpected discovery was made and later identified as an uncharted wreck. It was confirmed by one of our archaeologists as the SS Tobol, a merchant vessel of the Russian Volunteer Fleet that was torpedoed on 11 September 1917 by a German U-boat in World War I while sailing from Blyth, north-east England to Arkhangelsk, Russia.

As the location of the Tobol was not yet mapped, we shared the wreck's location with the UK Hydrographic Office who updated official charts of wreck sites. We set up a 250-metre temporary exclusion zone around the wreck to protect it during our works. We are engaging with Historic Environment Scotland to establish a long-term archaeological exclusion zone to ensure the preservation of this important find.



Cultural heritage

The project has identified onshore and offshore local heritage sites and sites of national importance, such as scheduled monuments, listed buildings and archaeological assets, to ensure they are avoided where possible. Desk-based research, surveys and site visits will be undertaken to gather more information on both known and as yet unknown heritage assets.

Where it is not possible to avoid likely significant effects, we will explore appropriate mitigation measures through engagement with Historic Environment Scotland and Aberdeenshire Council. Any archaeological finds made through our work will be recorded and reported to Historic Environment Scotland.

Landscape and visual

The landscape of northeast Aberdeenshire varies from sandy bays, dunes and rocky headlands to low hills and shallow valleys inland, with rivers and woodlands. The area is made up of rural settlements and farms and some industry, as well as the coastal towns of Peterhead and St Fergus. The coastal landscapes are locally designated and protected by Aberdeenshire Council as Special Landscape Areas.

We have consulted with NatureScot and Aberdeenshire Council to map and record local landscape and visual aspects of the Aberdeenshire area. This information is being considered as we develop the project, to help protect the landscape and visual amenity in this area.

The offshore wind turbines will be approximately 75km at their nearest point from the Aberdeenshire coast and consequently they will be barely visible, even in clear weather, from the shore.

Onshore visible infrastructure includes the onshore substation, which alongside other project infrastructure will be sensitively sited and designed. Environmental mitigation and architectural measures will be developed to minimise potential effects and, where possible, provide long term enhancement of the landscape. The cables will be installed underground.

Traffic and transport

We will work with Transport Scotland and Aberdeenshire Council to assess and develop measures to mitigate any short-term effects on the road network to be used for construction access. Management and mitigation plans will be developed and will include a commitment to working with other contractors to manage the effects of multiple sites being developed at the same time. The plans will also include enforcement of any restrictions on delivery timings required by Aberdeenshire Council to minimise the effect on people, wildlife, and buildings located nearby the proposed construction access route.

The operation, maintenance and decommissioning of MarramWind are not expected to have any noticeable long-term effects on the local road network.

Air quality

The air quality in Peterhead and the wider Aberdeenshire area is very good. Monitoring is undertaken by Aberdeenshire Council across the region and has been in place for a long period of time.

Potential effects on air quality from MarramWind could arise from temporary construction activities, including construction traffic and dust along the exposed cable route and excavation points. These activities will be short-term only and appropriate mitigation measures will be put in place through the Construction Environmental Management Plan to address any issues.

Greenhouse gases and climate change

We have used climate change data to understand how the changes in weather conditions due to climate change, such as temperature, rainfall and sea level rise, can affect the construction, operation and decommissioning of MarramWind. We are considering how to design and plan the project to be resilient to climate change, to ensure the continued safe operation of the windfarm with little disturbance to energy generation.

Although MarramWind will be providing renewable energy, some greenhouse gas emissions will be emitted during construction and installation of the infrastructure, as well as from the maintenance and decommissioning of the project. A full project life cycle assessment of greenhouse gas emissions, from construction to decommissioning, will be undertaken to identify appropriate mitigation measures. As part of our project commitment to sustainable development and environmental enhancements, we will be continuously looking for opportunities to incorporate measures that reduce greenhouse gas emissions within the construction and maintenance phases. Measures such as these will be reported within the carbon assessment.

Habitats Regulations Appraisal

A HRA is required under Scottish law to be undertaken where there is potential for a project to affect certain types of nature conservation sites.

The conservation sites considered in HRA are:

- **Special Areas of Conservation** (including those proposed but not yet formally designated), which are designated for the presence of "qualifying features". These may include specific habitats, combinations of habitats, species or assemblages of species, or combinations of these.
- **Special Protection Areas (SPA)** (including those proposed but not yet formally designated), which are designated for the presence of "qualifying features". These may include bird species that are rare, vulnerable, in danger of extinction, or requiring protection due to their habitat needs. Migratory bird species are also included as qualifying features in some SPAs.
- **Ramsar Sites**, which are designated for the presence of "qualifying features" that are defined by criteria set out in the Convention on Wetlands of International Importance (the Ramsar Convention). These are typically wetland habitats that support important communities of birds.

Alongside the work to deliver the EIA, the Project team has prepared an HRA Screening Report. That report explains the HRA process and identifies the sites that could be affected by the project. Aberdeenshire Council and the Marine Directorate (on behalf of Scottish Ministers) are the competent authorities with responsibility for HRA, so they will respond to it with a formal Screening Opinion that will be used to inform the next stage of the HRA. Where the HRA Screening Report identifies the potential for "likely significant effects" on a designated site to occur and the Screening Opinion agrees with this conclusion, it will become necessary for an Appropriate Assessment to be undertaken by Aberdeenshire Council and the Marine Directorate (on behalf of Scottish Ministers).

Under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended), the Conservation of Offshore Marine Habitats and Species Regulations 2017 and the Conservation of Habitats and Species Regulations 2017 (as amended), the project must provide information to allow Aberdeenshire Council and the Marine Directorate (on behalf of Scottish Ministers) to determine whether an Appropriate Assessment is required, and to subsequently undertake this as necessary. This will involve the preparation of a Report to Inform Appropriate Assessment, which will be submitted to Aberdeenshire Council and the Marine Directorate (on behalf of Scottish Ministers) alongside the EIA. Both the HRA Screening Report and the Report to Inform Appropriate Assessment will be publicly available upon submission.

Benefits and Opportunities

Offshore wind has the potential to generate considerable economic value to Scotland, particularly the north-east, where it can play an important role in supporting energy transition to a low carbon economy. MarramWind will work closely with local communities, businesses and other key stakeholders to help Scotland maximise the value that offshore wind has to offer.

MarramWind is committed to maximising socio-economic benefits and will create industrial, economic, employment and skills benefits for local communities in Scotland. By creating opportunities across the project lifecycle, MarramWind is seeking to stimulate investment in Scotland's supply chain capabilities, which will help us to maximise Scottish involvement where possible.

To help unlock the value of floating offshore wind, we commit to providing £25 million via a stimulus fund to benefit the Scottish supply chain. The fund will invest in Scottish infrastructure and facilities supplying key goods and services for offshore wind, as well as supporting companies to innovate and upskill, including small and medium-sized enterprises (SMEs).

We are seeking your feedback on the potential opportunities for MarramWind to leave a positive legacy. Please see questions in the Benefits and Opportunities section of the feedback form to submit your views.

We are committed to early-stage engagement with the supply chain and will seek to create a clear, visible pipeline of opportunities to help SMEs and new market entrants establish themselves as key players in the sector.

Another key driver of success will be the creation of sustainable employment opportunities for local communities, which will be supported through the development and upskilling of the current and future workforce. We are committed to tackling skills shortages by working with established industries, including oil and gas and the armed forces, to create employment transition routes and accessible training opportunities. This will be complemented by entry level career opportunities, such as graduate and apprenticeship roles, both directly and within the supply chain.

Furthermore, we will continue to work with education institutes to support learning about Science, Technology, Engineering and Maths (STEM) subjects, helping to stimulate interest in offshore wind from Scotland's future offshore wind workforce.

Community Benefit Fund

We take pride in being a positive and productive part of the communities near our windfarms and we want these communities to benefit from a future powered by renewable energy.

MarramWind is committed to working alongside communities to deliver community benefits which align with our commitment to sustainability and meet local needs and aspirations. Over the coming months and years, we will work with local communities and stakeholders to determine how such benefits will be delivered.

We commit to providing funding of

£25 million

for MarramWind to benefit the Scottish supply chain


MarramWind
Environmental Scoping

Stakeholder Engagement

We are committed to ensuring stakeholders understand our proposals and can influence how we approach the project's design, construction and operation. Our vision is to develop an offshore windfarm in a considered way that is sensitive to the needs and expectations of local stakeholders whilst creating long-lasting benefits and opportunities for the people in the north-east of Scotland.

Since being awarded the opportunity to develop MarramWind in 2022, our team has been undertaking detailed engineering, technical and environmental studies, and has engaged closely with a wide range of stakeholders, including government bodies, environmental organisations, community representatives, the fisheries industry and landowners, to gain their early input.

We are committed to open and transparent engagement and communication, which will help us obtain stakeholder feedback that will be considered carefully to inform the final design decisions that we take. As part of our commitment to engaging with you, we will:

- Share accessible and transparent information;
- Engage with and consult a wide range of stakeholders;
- Fully consider all feedback received;
- Identify issues and work with stakeholders to seek mutually acceptable solutions; and
- Coordinate how our project is progressed in the area with other developers to maximise benefits and mitigate cumulative impacts.

For the latest information on MarramWind or to stay up to date with future engagement events please visit our website **www.marramwind.co.uk**, scan the QR code or follow us on X at **@MarramWind**. If you have any oustanding questions not covered in the consultation materials, you can email us on **stakeholder@marramwind.com**.

Working with other developers

Due to the number of proposed energy projects in the vicinity of Peterhead and the surrounding area, we recognise the need for collaboration to ensure local communities are sufficiently informed about the different proposals, that opportunities are explored to mitigate potential cumulative effects, and to maximise the socio-economic benefits associated with our projects. That's why we are active members of the Peterhead Developers Forum, bringing together developers and other industry initiatives across the north-east on a regular basis to share learning and future plans.


Fisheries Awareness day


MarramWind
About MarramWind
Offshore Windfarm
The proposed MarramWind Offshore Windfarm will use floating wind turbines that could deliver up to 3 Gigawatts of renewable energy. The turbines will be located approximately

Have Your Say

Providing your feedback

Thank you for taking the time to read through our proposals. Now that you have more information on the proposed MarramWind Offshore Windfarm, we want you to share your feedback with us and let us know what you think. Your feedback is important to us, as we will consider it in project design decisions before we submit our planning application in 2025. All feedback received will be considered.

You can provide your feedback through one of the following ways:

- Online, using the feedback form on our website **www.marramwind.co.uk**
- Email us your comments at **stakeholder@marramwind.com**
- Fill in a paper feedback form. These will be available throughout the consultation at our two consultation events and at Peterhead Library.
- Write to us at FREEPOST MarramWind.

This consultation will run from **27 May 2024 to 11:59pm 1 July 2024**. Feedback received after the deadline may not be considered.

We cannot respond to every response received individually. Details on how we have considered feedback in the refinement of our proposals will be provided at future consultation events due later this year, at which we will present a more refined project design for you to comment on. We will also present all of the feedback received at both rounds of consultation, and provide information on how it was considered, in a Pre-Application Consultation Report, covering both onshore and offshore elements of the project. This will be published as part of our planning application.

Comments made to us at this stage are not formal representations to the Planning Authority or the Scottish Ministers. Following the submission of our planning applications, which we intend to submit in late 2025, you will have further opportunity to make representations to Aberdeenshire Council and the Scottish Government's Marine Directorate, who will determine whether to grant planning permission and other required consents for the Project.

Finding out more

All information related to the proposals is on our website **www.marramwind.co.uk**.

If you have any questions, including requesting materials in an alternative format, you can email **stakeholder@marramwind.com**.

Consultation events

We will be holding two public consultation events during the first consultation period, which we welcome members of the local community and other stakeholders to attend. Members of our project team will be available to provide more information and answer any questions you may have.

The events will take place on:

- **Thursday 6 June, 1pm – 7pm**, Palace Hotel, Prince St, Peterhead AB42 1PL
- **Friday 7 June, 1pm – 7pm**, Longside Parish Church Hall, 4-13 Inn Brae, Longside, Peterhead AB42 4XN

Online consultation event

We will also be hosting two online presentations about our proposals. This will be another opportunity for people interested in the proposed MarramWind Offshore Windfarm to find out about the project.

The online consultation events will take place on:

- **Thursday 30 May, 6pm - 7pm**
- **Wednesday 26 June, 6pm - 7pm**

If you would like to join, please email **stakeholder@marramwind.com**.

Next steps

We will be hosting a second consultation later this year on a more refined project proposal, which you will have another opportunity to provide feedback on.

Further details of our second consultation period will be released online and in the local media in due course.

When we submit our applications, Aberdeenshire Council and the Marine Directorate (on behalf of Scottish Ministers) will determine whether to grant permission for the project. During the representation period of the determination, you will have further opportunity to comment on our proposals for MarramWind.

Glossary

Accommodation platform: an offshore platform that supports living quarters for offshore personnel.

Crown Estate Scotland: manages the Scottish Crown Estate on behalf of Scottish Ministers, including most of the seabed off Scotland's coasts.

Decommissioning plan: a plan describing the removal of offshore infrastructure at the end of its useful life, plus disposal of equipment.

Digital aerial surveys: photography taken from a plane to collect data on a variety of wildlife including birds, marine mammals and fish.

Ecological: relating to the environments of living things or to the relationships between living things and their environments.

Electricity transmission: the transmission of electricity via cables from the turbines to the substations.

Energy security: Having a reliable and diverse supply of energy to meet demands.

Environmental Impact Assessment (EIA): the evaluation of how the planned project might affect the natural surroundings, living organisms, and people throughout its construction, operation, and eventual decommissioning.

Floating unit: a floating structure on which the wind turbine is installed, providing it with buoyancy and stability.

Gigawatt: a gigawatt (GW) is a unit of power equal to one billion watts. It is a measure of the rate at which energy is generated or consumed per unit of time.

Habitat: the natural environment in which an animal or plant usually lives.

High Voltage Alternating Current (HVAC): a type of high voltage electrical current, in which the direction of the flow of charge changes back and forth at regular intervals or cycles, in the UK it works at 50 cycles per second. The majority of the UK electricity grid is HVAC.

High Voltage Direct Current (HVDC): a high voltage electrical current that flows in the same direction.

Holistic Network Design (HND): a coordinated network design exercise completed by the National Grid Electricity System Operator (NGESO) that provides a recommended offshore and onshore design for connection of offshore wind projects to the UK electricity network. This is an NGESO process that has been established to facilitate the UK Government's ambition for 50GW of offshore wind by 2030.

Horizontal Directional Drilling (HDD): a trenchless method of installing underground cables using a drill.

Intertidal zone: the area where the sea meets the land between high and low tides.

Landfall: the point at which the cables transferring power from an offshore windfarm reach the shore.

Life cycle: the sequence of phases through which a project progresses. It includes initiation, planning, execution, and closure.

Marine Directorate: responsible for the integrated management of Scotland's seas on behalf of the Scottish Government.

Mean high water springs (MHWS): the average tidal height throughout the year of two successive high waters during those periods of 24 hours when the range of the tide is at its greatest.

Mean low water springs (MLWS): the average tidal height throughout the year of two successive low waters during those periods of 24 hours when the range of the tide is at its least.

Net zero emissions: a position where total greenhouse gas emissions would be equal to the emissions removed from the atmosphere, with the aim of limiting global warming and resultant climate change.

Offshore cables: these are electrical power cables that are installed offshore, buried in or laid on the seabed between the wind turbines, and then run the electrical power cables from the wind turbines to the offshore substation and from there to the landfall(s).

Offshore platform: a concrete, steel or hybrid substructure that is fixed to the seabed and supports offshore infrastructure above the sea surface.

Offshore substation: an offshore platform containing electrical equipment that collects energy generated from wind turbines and prepares it for transmission to shore via cables.

Onshore substation: the substation on land that connects the power transmitted from the offshore substation to the national grid. The onshore substation may change the electricty voltage to the voltage level required for the national grid connection.

Renewable electricity: also known as green electricity or clean electricity, it is electrical power generated from renewable energy sources such as wind, hydro or solar.

Scoping Report: a document that sets out the project's understanding of consenting requirements and what the project intends the Enviromental Impact Assessment report to cover.

ScotWind leasing process: process led by Crown Estate Scotland to enable developers to apply for seabed rights to plan and build windfarms in Scottish waters.

Socio-economic benefits: benefits can include job creation, local investment, and reduced carbon emissions, which contribute to economic growth and environmental improvement.

Supply chain: the network of companies and activities involved in producing and delivering everything needed for the windfarm, from manufacturing the wind turbines and cables to construction and maintenance.

Supply chain stimulus fund: helps to stimulate economic growth and job creation within the supply chain by encouraging investment and development.

Transformer: an item of electrical equipment, contained in a substation that is used to change the voltage for power transmission and distribution at different levels.

Switchgear: the electrical equipment used in substations to manage and control the flow of electricity.

Wind turbines: the infrastructure that collects the wind energy and converts it into electricity for connection to the power networks. Each wind turbine consists of a number of blades that connect to a rotor hub, which rotates an electrical generator.

For illustrative purposes only. The turbines used on MarramWind will have a different appearance at the water's surface.