

Helvick Head Offshore Wind project webinar Q&A

The following questions were submitted during the Sea Stacks Offshore Wind project webinar hosted by ESB on 15th November 2022. If you have further questions at any stage please email the project mailbox at info@helvickheadoffshorewind.ie

1. Where do I go to provide my feedback on this project?

To engage on the project at any stage, the first port of call should be the project webpage - www.helvickheadoffshorewind.ie. This will contain any appropriate updates as well as direction on how to submit queries or comments to the project email address. If you wish to set up a call with anyone from the project team, or request a face-to-face meeting, again the best place is to do that via the 'contact us' section of the webpage.

Outside of direct interface with ESB on the project, everyone will have an opportunity to make submissions on the project via the Government's own public consultation process. Information on any such consultation will be available under 'Latest News' on our project website when the consultations are live.

2. What is the proposed model for the sale of the electricity generated? Where will the energy go? Is there a minimum that must go to Ireland? If so, what is that number? If the arrangement is different then what is it? A new interconnector suggests a significant amount to be sold outside the country – will it be going to the highest bidder? Are we to sacrifice our coastline to be a power station for the UK or continental Europe?

It is proposed that the project would compete for government support under the second phase of the Offshore Renewable Energy Support Scheme auction process, more commonly known as ORESS2, which is expected to take place in 2025. Upon winning a contract in an ORESS auction the project would be required to reach commercial operation by a defined date and supply renewable electricity to the national grid for a defined duration (possibly up to 20 years) at a set price (as defined through the auction process) to aid in achieving Government's set targets of at least 7 gigawatts (GW) of offshore wind and 80% renewable penetration by 2030.

The electricity generated would be used for general consumption in the commercial, retail, industrial and domestic sectors. Once fed into the national grid, neither ESB nor the Helvick Head project has any control over where the electricity flows.

If the project was unsuccessful in winning an ORESS contract it could investigate alternative routes to market such as a corporate Power Purchase Agreement (PPA) – a form of direct supply contract between the project and a corporate third party offtaker. The government is active in promoting PPAs as a means for Ireland to achieve its 2030 renewable energy targets and beyond.

3. Is the depth of the ocean floor of the Waterford coast significantly greater than that of other European coastlines where windfarms are built at least 20km offshore?

Water depths within the Foreshore Licence boundary of the array area extends from >40m nearest shore to approximately 65m along the boundary line furthest from shore. Ireland's seafloor is such that there are a limited number of locations to develop fixed-foundation

wind farms, particularly off the south and west coasts. In this regard, Ireland's coastline contrasts to a lot of other European coastlines.

It is general industry opinion that fixed bottom offshore wind farms will be technically limited to 60-70m maximum water depths.

4. It was previously stated that South Coast offshore wind will try to stick to European limit of 22km – how much of this proposed wind farm will lie inside the 22km limit?

The proposed general "area of search" for the development of the Helvick Head project is 10km from shore at its closest location but extends further from shore from there. The project is at an early stage of development and a final layout for the Wind Turbine Generators (WTGs) has not been agreed.

Wind Energy Ireland issued a paper publicly in May 2021 that addressed the claim that there was a European limit of 22km from shore for development of offshore wind farms. That paper states that, by the end of 2020, 7.8GW of offshore wind farms were installed and operational at less than a distance of 22km from shore and a further 16GW had planning or had applied for planning within that distance.

There are some countries that have put in place distance-to-shore restrictions, but it is important to understand that their water depths are much shallower than in Ireland. No country in Europe, or anywhere in the world, has proposed effectively blocking fixed-bottom offshore wind farms. Britain, which is currently the largest offshore wind energy market in the world, has no distance-to-shore restriction on offshore wind farm development. Denmark, the world's leader in wind energy development, likewise has no such restriction. In Germany, individual states have authority over offshore wind energy planning up to the 12 nautical miles (22km) limit. Of the three German coastal states only one, Schleswig-Holstein, has a restriction and this is currently under review. Neither of the other two states has a 22km limit.

5. I'd like to know what research has been considered/commissioned regarding the impacts of the proposed windmills on the local environment with specific regard to the impacts on swell refraction & degradation of swell height?

ESB is currently finalising a metocean modelling exercise with a specialist consultancy and this is due to be finalised within the coming months. This metocean model for the site can then be used to further undertake coastal process modelling, etc. which will serve as input to the Environmental Impact Assessment Report (EIAR) studies.

6. At the moment I'm specifically interested in where things stand with regard to investigating possible locations for cables to come ashore, and when preferred location(s) might be decided upon.

ESB has carried out a feasibility study to investigate possible cable landing points along the Waterford and Cork coast. The feasibility study consisted of the following:

- Identification of feasible landfall options;
- Options assessment considering both technical and consent / environmental criteria taking account of:
 - available cable installation methods (e.g. trenching, Horizontal Directional Drilling);

- high level consideration of possible onshore routes to connection point (ensuring landfall is not stranded from possible onshore routes);
- Ranking of options identified from a combined technical and environmental perspective; and
- Preliminary identification of possible land take requirements (permanent and temporary) adjacent to landfall points for joint bays and construction compound that may require option agreements to facilitate construction.

7. I am interested to know what bringing cables ashore will look like, i.e. will cables be underground with minimal above ground visibility of cables and supporting infrastructure?

The cables will be installed within a cable trench which will be approximately 1.6m wide and 1.25m deep subject to detailed cable rating studies. The visible infrastructure would consist of 2 manhole chambers at each cable jointing locations and the road would be fully reinstated. The manhole chambers allow access to maintain the cable and the fibre cable.

8. Will the substation be underground, as in the plans of another developer?

We have identified a number of proposed submarine cable landing points to transition between the submarine and land export cables. The cables will be installed underground to connect the export cable to the existing national grid. The substation to allow the export cable to connect to the existing electricity grid will be an above ground substation with associated equipment. We are not aware of an underground substation development proposal by any other developer but we can review information on this if it could be passed onto us at info@helvickheadoffshorewind.ie

9. Who is conducting the marine life survey? Who is funding them? Will the results be made available to the public?

Independent expert consultancies have been commissioned to carry out the long lead ornithology and marine mammal surveys on behalf of the project. These are commissioned and paid for by ESB. Further surveys such as the offshore environmental benthic surveys and other ecological surveys will be undertaken as the project progresses. Contracts for these have not yet been awarded. The results of all the surveys will be presented in the Environmental Impact Assessment Report (EIAR).

10. Will the windfarm affect the Copper Coast's status as a UNESCO Geo Park?

The wind turbine array will be sited offshore and outside the Copper Coast UNESCO Global Geopark. Impacts on designated sites as well as landscape and visual impacts will be assessed as part of the Environmental Impact Assessment (EIA) process.

11. Why is no other location in Ireland considered? The copper coast of Waterford is a Unesco heritage zone.

The Helvick Head project is one of a number of offshore wind projects that ESB is seeking to develop off the coast of Ireland including off Co. Louth, Co. Dublin / Wicklow, Co. Wexford, Co. Cork and Co. Kerry / Clare. Other offshore wind developers are also seeking to develop projects around the Irish coast. All developers, ESB included, will need to secure a Maritime Area Consent (MAC) from the Department of Housing, Local Government and Heritage (DHLGH) followed by planning consent from An Bord Pleanála (ABP) for any project that is to

be developed and thereafter will have to secure a route to market and most likely a grid connection.

The Copper Coast UNESCO Global Geopark extends for some 17km from Kilfarrasy in the east to Stradbally in the west. The wind turbine array will be sited offshore and outside the Copper Coast UNESCO Global Geopark. Impacts on designated sites as well as landscape and visual impacts will be assessed as part of the EIA process.

12. Your wireframe impressions of how the turbines might look from land do not look at all accurate. They seem so small when compared to photos of actual offshore wind farms. What methodology did you use to create them?

I have seen images of proposed sites being displayed alongside existing operational sites and appreciate that quite often the images look very different. I have spoken with the contractor who prepared our photomontages and he confirmed he has complied fully with the Landscape Institute's Technical Guidance Note on Visual Representation of Development Proposals. He said he has seen numerous such examples but said that very rarely is there any specific information on the camera that was used to take the comparative photo, the size of the lens, the focal length that was used, the field of view, etc. He said images can be manipulated by using a long focal length and that this has the effect of bringing background images closer to the foreground, so when comparing images it's essential that both have been taken and displayed in accordance with the Landscape Institute's Guidance Note.

From a methodology perspective, the images were captured using Sony a7iii and Sony a7iv cameras with a Samyang 50mm lens. The turbine images were produced using proprietary 3D modelling software using the dimensions provided by ESB. The images were then stitched using PTGUI (Panorama Tools Graphical User Interface) and the images overlaid using Photoshop. The location for each set of photographs was determined using a Garmin GPS 65s.

13. What is the proposed community dividend for this wind farm and over what time period is it to be paid?

The rules around community support for the phase 2 projects (such as Helvick Head) are yet to be published, but it's expected projects will have to contribute €2/MWhr. For a site such as the Helvick Head project proposed that could equate to €5-6m per annum for the duration of the ORESS subsidy support period, anticipated to be 20 years as per ORESS1 (commencing at the start of construction). The phase 2 ruleset is still awaited but this is how we anticipate things will be.

14. What disruption to local fishermen will take place during survey work / construction?

ESB will endeavour to minimise disruption as best as practicable and will develop a survey and construction strategy in this regard taking into account Health and Safety (H&S) risks for simultaneous operations and any applicable H&S or marine legislation/guidelines as required.

15. What plans are in place to minimise disruption to fishing?

We have carried out some engagement with fishers as mentioned during the presentation but are conscious this will need to increase significantly as we move towards commencement of any works. In doing this we hope to attain a much better understanding of who fishes within any of the site area, what areas are particularly important, and if there are particular times of the year we should try to avoid. Once we have this information, we will be in a much better position to define a survey boundary and in turn the wind farm site itself. The more we know and the sooner we know the better as we are very keen to keep impacts to a minimum but that is somewhat dependent on the fishing community engaging openly with us in that regard.

- 16. Will fishermen be allowed to fish inside the area of the array when constructed, if insurance is cited as a potential issue? What is being done to rectify this? If the MSO is being cited as the reason have you contacted the MSO for clarification? Will there be an exclusion zone around the windmills during construction and after when they would be operational? If so, who polices it and how it would be enforced?**

Our aim is coexistence with the fishing community and, where possible, to enhance opportunities for them. Separation distances between turbines are up to 1.5km, and potentially more, and my understanding is that much fishing activity should be able to persist within the array area given these separations. We appreciate there may be impacts during survey and construction periods, so I would encourage any fishers who feel they may be impacted by this to reach out so that we can have a proper conversation about this.

Regarding the MSO, this point was raised at the Offshore Renewable Energy Seafood Forum meeting at the Marine Institute at the end of October and the chair of the group, Captain Robert McCabe, said that the MSO will not be insisting upon an exclusion zone nor do they have the legal authority to insist upon one. From a safe operation perspective we appreciate fishers will want to keep sufficiently back so as to avoid collision with the wind farm infrastructure, but again I come back to the aim of coexistence as absolutely key for us regarding these proposals.

- 17. Have you costed construction at a range of depths and distances? What is the payback period over these options?**

Water depths within the foreshore licence boundary of the array area extend from >40m nearest shore to approximately 65m along the boundary line furthest from shore. Refinement of the project design and site boundary will be undertaken through detailed technical analysis of information as it becomes available after site specific surveys, e.g. geotechnical, geophysical, metocean and wind resource parameters.

- 18. What commercial and planning arrangements have been made between Government, Waterford City and County Council and ESB (and other prospective suitors)?**

As a first step ESB will seek to acquire a Maritime Area Consent (MAC) for the project from the Maritime Area Regulatory Authority (MARA) likely at some stage in 2023. MARA is currently being established by the DHLGH and is due to commence business at the start of 2023. The MAC is effectively a seabed lease that would provide the project with permission to generate renewable electricity from offshore wind on a particular piece of seabed. ESB may be competing with other developers for access to the same area of seabed identified for Helvick Head.

Further to receipt of a MAC, ESB would then be in a position to submit a planning application for the project to ABP on the basis of having satisfied necessary EIA requirements. Waterford County Council would be a statutory consultee for this planning process. It is expected that a planning decision from ABP would take at least 12 months. In parallel with the planning process, ESB would seek to enter the project in a competitive ORESS auction to secure government support to construct and operate the project and supply renewable electricity into the national transmission system for a defined duration (up to 20 years). Upon being successful in an ORESS auction, ESB would seek a grid connection agreement for the project from EirGrid.

If the project was unsuccessful in winning an ORESS contract it could investigate alternative routes to market such as corporate PPAs (a form of direct supply contract between the project and a third party corporate offtaker). The government is active in promoting PPAs as a means for Ireland to achieve its 2030 renewable energy targets.

19. What are the options for public scrutiny and when are these available? Will there be Town Hall style meetings that we can attend?

It is our plan to engage regularly and widely on the project as it progresses. Updates will be provided in some and/or all of the following forms:

- Project website updates;
- Further phases of the virtual consultation room;
- Further project webinars; and
- Public exhibitions.

In relation to the public exhibitions, we have three events booked for County Waterford to run from 29th November to 1st December, to run from 4-8pm each evening. Further information on these is available on the project website.

20. Has serious consideration been given to floating installations as others are being proposed along the coastline? If the technology is mature enough it should be pursued. The lifetime of the proposed windfarm is 25 years, our expectation is that it will extend beyond that as the infrastructure is in place, energy will still be required and it will be making profit for the owners, so whatever solution is chosen it is likely to be in place for the foreseeable future – so it should be the best and most appropriate solution.

ESB currently has a number of floating offshore wind farm (OWF) sites/projects in development within our Irish portfolio and further floating sites are being developed by ESB outside Ireland – this information is simply to highlight that ESB do view floating offshore wind as future technology within our planned development portfolio. However, given the maturity of technology, availability of the supply chain and overall system for Lowest Cost of Energy (LCoE) for floating offshore wind relative to fixed foundation wind, it is anticipated that the government will seek to target fixed foundation wind as the primary mechanism to meet Ireland's 2030 renewables targets.

With regards to lifetime considerations for the projects this will be limited to the design life of certain key components such as foundations and WTGs which ESB will continue to monitor during the life of the project to determine whether extensions are feasible / economic / safe.

21. What is the policy for dealing with the displacement if there is any?

Our aim is coexistence with the fishing community and, where possible, to enhance opportunities for them. Separation distances between turbines are up to 1.5km, and potentially more, and my understanding is that much fishing activity should be able to persist within the array area given these separations. We appreciate there may be impacts during survey and construction periods, so I would encourage any fishers who feel they may be impacted by this to reach out so that we can have a proper conversation about this.

Specifically regarding displacement, ESB is very happy to discuss this further with any fishers that may be impacted. An evidence-based approach regarding same will need to be agreed between both parties, but ESB will do all it can to minimise impacts wherever possible and work with impacted fishers. Please feel free to email the project mailbox (info@helvickheadoffshorewind.ie) on this if you believe you will be impacted.

22. What will this energy generated be used specifically for? Data centres/household electricity/exported?

In the case of the project receiving an ORESS contract the energy generated would be fed to the Irish National Grid for general consumption in the commercial, retail, industrial and domestic sectors. Once fed into the national grid, neither ESB nor the project has any control over where the electricity flows.

In the case of the project signing a Corporate PPA (CPPA) with a corporate entity/offtaker, the electricity would be supplied to that corporate entity most likely via the transmission system.

23. What will this energy generated be used specifically for? Data centres/household electricity/exported?

In the case of the project receiving an ORESS contract the energy generated would be fed to the Irish National Grid for general consumption in the commercial, retail, industrial and domestic sectors. Once fed into the national grid, neither ESB nor the project has any control over where the electricity flows.

In the case of the project signing a CPPA with a corporate entity/offtaker, the electricity would be supplied to that corporate entity most likely via the transmission system.

24. When the European standard is 22km offshore limiting visual/noise/eco impact, why are these turbines being built so close to the shoreline, apart from cost saving to the company to maximise profit?

To the best of our knowledge there exists no European wide standard that imposes a distance to shore restriction on offshore wind farms. [Please also see the answer to Question 4 above.]

25. The area under consideration is close to areas of special conservation. Has ESB any video of the proposed impact of these pylons to the visual amenity from Dungarvan Bay and Helvick head? What considerations are being given to this visual intrusion?

Photomontages from 11 locations around the Waterford coastline were prepared for the virtual consultation room (which was open from 31st May – 11th July this year) to give viewers an idea of what the wind farm might look like. These montages were based on 3

different layouts as at this stage it is too early to determine where exactly we would want to place the turbines. We will only be able to form an opinion on that once the geophysical, geotechnical and metocean surveys have been carried out. These photomontages will again be on display during the series of public exhibitions, and will be refined as the project progresses.

The design process and siting of any offshore wind farm (OWF) needs to take into consideration all the other environmental aspects, such as marine habitats, ornithology, fisheries, shipping and navigation, etc. All of these will feed into how we identify the best location and one which has least impact.

We will be appointing specialist and highly experienced landscape, seascape and visual specialists as part of the environmental impacts assessment stage of the project. They will be undertaking desktop studies and fieldwork to examine potential views from key receptor or sensitive locations. Their findings will inform project design and the early-stage findings will be shared during a public consultation process.

As part of the planning application and Environmental Impact Assessment Report (EIAR), the final design will be illustrated in photomontages so that people can see what the project will look like from various viewpoints. The potential for cumulative impacts with other offshore projects will be examined as part of the EIAR.

The key engineering and technical aspects that will influence the final layout design include:

- Wind resource and managing internal / external wake impacts;
- Size of commercially available Wind Turbine Generators (WTGs) in the latter part of the 2020s;
- Presence of site geohazards (e.g. paleochannels, unexploded ordnates (UXO), existing seabed cables, shipwrecks, challenging ground conditions, etc.); and
- Proximity to other projects in the vicinity presently in development.

Consideration of these aspects in combination with the environmental factors noted above will ultimately inform the layout.

26. I see Scotland recently awarded 11 leases for floating wind farms for delivery by 2030, why are you not using floating wind farm technology that you can use further out to sea?

ESB have also been successful in the recent Scotwind leasing round.

There is no fixed requirement for ScotWind projects to be developed by 2030. Scotland's Offshore Wind Policy Statement (2020) is targeting 8-11GW of offshore wind by 2030 of which the majority will be achieved through previously leased projects (including ESB's Neart na Gaoithe and Inch Cape).

It is expected that fixed foundation Scotwind projects in areas with available grid capacity (e.g. requiring minimal reinforcements) will have the best chance of meeting this 2030 timeline but it is worth clarifying that there is no imposed deadline for delivery by 2030 for any of these projects.

27. Will any of the energy that is being generated be exported? If so, where will it be exported to? And how much loss of energy will occur in the exportation process?

Upon winning a contract in an ORESS auction the project would supply renewable electricity to the national grid for a defined duration to aid in achieving government set targets of at least 7GW of offshore wind and 80% renewable penetration by 2030. The electricity generated would be used for general consumption in the commercial, retail, industrial and domestic sectors. Once fed into the national grid, neither ESB nor the project has any control over where the electricity flows.

28. Tramore is a seaside resort where the primary economic factor is seasonal visitors availing of the local seaside amenity. What economic impact analysis was conducted by the ESB on the proposed installation and is it available for review or will it be submitted to the council?

There is the potential for the project to bring additional visitors to the main coastal towns in the county to view the offshore wind farm from land and sea. Aside from this it is accepted that any offshore wind farm will bring economic benefit to a locality with the creation of direct and indirect jobs during both the construction stage (lasting approximately 2 years) and the operational stage (a minimum of 25 years). ESB will identify an Operations and Maintenance (O&M) base for the project in due course.

29. Would it be possible to get an update as to the latest activities and timeline of the Helvick Offshore Wind project please?

Currently the project is in the early stages of development where a high level project design has been produced based on a desktop constraints analysis looking at such items as seabed characteristics, wind and ocean data, environmental impacts, existing marine infrastructure, shipping and navigation channels and so forth. ESB has also engaged with various marine and local stakeholders that might be impacted by the development of the project to seek their views through various fora such as this public webinar.

The project has to date completed a number of long-lead time surveys such as bird and mammal surveys in proposed development areas. The project is also awaiting a foreshore licence from the DHLGH that will allow it to undertake geophysical and geotechnical surveys of the seabed areas in question to confirm the seabed characteristics. We hope to undertake a geophysical survey of the seabed area in 2023.

It is intended that the project will apply for a MAC from MARA in 2023, continue with general development activities in 2024 and apply for planning consent to ABP in 2025 and compete in ORESS2 in that year also. Then in 2026 it is expected that ABP will make a final planning decision and EirGrid will confirm the grid connection for the project. Construction is expected to commence in 2027 with commercial operation due by 2029 when the project will start contributing to government 2030 renewable energy targets.

30. Have you shortlisted any ports for O&M yet?

ESB is in the process of evaluating the suitability of regional ports to support the O&M phase of the project. ESB is in discussions with a number of potential ports re this phase of the project. Once these evaluations are complete, a preferred shortlist will be identified where it is then planned that further detailed discussions will be entered into with these ports for the project.

31. Cé chomh fada amach ón gcósta a bheidh an seastán cumhachta/How far offshore will the substation platform be? GRMA

Beidh sé ar a laghad 10km ón gcósta. Níl suíomh an seastán cumhachta deartha go fóill (mar aon le dearadh na feirme gaoithe féin). Is féidir a rá mar sin fhéin go mbeidh sé taobh istigh de teorainn an achar muire atá aitheanta don ceadúnas imeall-trá atá á lorg ag BSL/ESB.

32. What percentage of our electricity need will the projected 7GW target represent by 2030?

Electricity demand on the all-Ireland electrical grid changes constantly based on the requirements of the consumer with daily peaks each morning and evening and annual peaks coming during the winter. Typically, daily evening peak demand in winter time 2022 is currently reaching almost 6.5GW (all time maximum system demand reached c. 6.9GW in Dec 2010). See the Eirgrid website for further system demand information and historical records.

7GW of delivered offshore wind projects will deliver a variable amount of electricity into the system that will depend on the prevailing wind conditions, availability of equipment and system constraints but it is fair to say that this level of build-out will contribute significantly to achieving the government targets of 80% renewable electricity on the system by 2030, aided by onshore wind, solar and other renewable enabling technologies.

33. What is the lifespan of a turbine? Will they be dismantled once decommissioned (including the concrete used for the foundations)?

With regards to lifetime considerations for the projects this will be limited to the design life of certain key components such as foundations and/or WTGs which ESB will continue to monitor during the life of the project to determine whether extensions are feasible / economic / safe.

In general terms other comparable projects within Europe have a design life of 25 years with possible considerations for extension to 30 or 35 years pending the status of the key components.

34. How are you coordinating or deconflicting with other offshore projects in the same area over the next few years?

ESB will have to apply for and successfully secure a Maritime Area Consent (MAC) from the Maritime Area Regulatory Authority (MARA) for the particular area of seabed that it wishes to develop the Helvick Head project on. Further to receiving a MAC it can then apply for planning consent from An Bord Pleanála, apply for a grid connection and complete in an ORESS auction.

35. You are assuming that everyone can use and is familiar with Menti. Zoom and chat is much better for a wider audience.

Zoom is not supported by ESB IT therefore webinars organised by ESB cannot be hosted on Zoom. Using MS Teams for webinars with the Menti platform to submit questions is seen as the most effective and user friendly combination available.

36. What ports do you forecast maybe developed or improved to facilitate the windfarm?

With regards to selection of an O&M port it would be possible that the preferred port (when selected) would require some redevelopment works to facilitate the needs of the project. A preferred port or shortlisted group of ports has not been defined at this stage of the project but work is ongoing in this context.

With regards to construction ports and making reference to the 'WEI National Ports Study' released in September 2022, it is highlighted that limited port capacity exists on the island of Ireland to enable the construction phase of an OWF but that significant opportunity for port redevelopment exists to facilitate this. Although ESB does not have a preferred construction port selected it is noteworthy to state that we are in discussion with a number of the ports with progressed redevelopment plans to gain an understanding of how we, as a project and ESB, can assist these plans which would in turn be used on our project.

37. I missed the final few slides with a phone call. How is the community dividend going to work?

The rules around community support for the phase 2 projects (such as Helvick Head) are yet to be published, but it's expected projects will have to contribute €2/MWhr of generation. For a site such as the Helvick Head project proposed that could equate to €5-6m per annum for the duration of the ORESS subsidy support period, anticipated to be 20 years as per ORESS1 (commencing at the start of construction). The phase 2 ruleset is still awaited but this is how we anticipate things will be.

When the ORESS2 guidelines are published it will become clearer what is expected of developers regarding the management of the community benefit fund. However, it is fully expected that such a fund would be managed at a local project level (as opposed to centrally by Government), and this will give the local community a much greater say on how the fund is spent. Further details on this will be uploaded to our project website when we know more.

38. I understand that placement of the wind turbines so close to shore is because the water depth drops off quickly. Floating technology is available for deep water installation. Why is it not being considered?

You are developing floating wind elsewhere. Why not here?

Why can't you use floating wind turbines so as to be able to have them further from the shore?

ESB currently has a number of floating OWF sites/projects in development within our Irish portfolio and further floating sites are being developed by ESB outside Ireland – this information is simply to highlight that ESB do view floating offshore wind as future technology within our planned development portfolio. However, given the maturity of technology, availability of the supply chain and overall system for LCoE for floating offshore wind relative to fixed foundation wind, it is anticipated that the government will seek to target fixed foundation wind as the primary mechanism to meet Ireland's 2030 renewables targets.

39. What criteria did you use to produce montages?

The montages were prepared in full adherence to the Landscape Institute's Technical Guidance Note on Visual Representation of Development Proposals. [See answer to question 12 above for further information.]

40. Will local schools, clubs etc. benefit from the annual funding?

The rules around community support for the phase 2 projects (such as Helvick Head) are yet to be published, but it's expected projects will have to contribute €2/MW hr of generation. For a site such as the Helvick Head project proposed that could equate to €5-6m per annum for the duration of the ORESS subsidy support period, anticipated to be 20 years as per ORESS1 (commencing at the start of construction). The phase 2 ruleset is still awaited but this is how we anticipate things will be.

When the ORESS2 guidelines are published it will become clearer what is expected of developers regarding the management of the community benefit fund. However, it is fully expected that such a fund would be managed at a local project level (as opposed to centrally by Government), and this will give the local community a much greater say on how the fund is spent. Further details on this will be uploaded to our project website when we know more.

41. Will you be considering a shore based O&M strategy (ie daily crew transfers) or a sea base solution (ie Service Operations Vessels)?

An O&M modelling exercise is currently ongoing which should define the preferred O&M strategy for Helvick Head OWF however it can be assumed at this stage that a shore based O&M strategy will be the preferred strategy.

42. Any thoughts on which port will be used for marshalling?

ESB does not have a preferred construction/marshalling port selected but it should be highlighted that we are in discussion with a number of the ports with progressed redevelopment plans to gain an understanding of how we, as a project and ESB, can assist these plans which would in turn be used on our project.

43. What will be the height of the turbines? Do you have a visual of where the turbines will be located and what we will see from the coast?

The height of the turbines is not yet set. Based on current technology with reasonable expected evolution for the latter part of this decade, turbine sizes in the order of 230-270m (rotor diameter) are anticipated. For context, a 270m rotor diameter machine with a 30m air gap to lower blade tip will have a 300m tip height.

Preliminary montages produced for the virtual consultation rooms were based on a 300m tip height turbine and were based on a few indicative layout configurations.

44. Have you decided upon the construction laydown areas that will be used on shore? If yes, where will these be? How many acres are needed? And how long will they be needed for? Also, what onshore land/quay access is needed for ongoing maintenance?

Analysis is currently ongoing to further define these construction specific details and will be dependent on the final design of the foundations and WTG model selected. Construction specific studies will be further developed in 2023 with assumptions currently used in our ongoing discussions with the ports.

45. What benefits will there be for the local economy? Can we expect discounted electricity price for the population of co. Waterford and Cork?

As touched on at the end of the webinar presentation, the benefits fall into the following four main categories:

- i. Contribution to ESB's and Ireland's renewable energy and decarbonisation targets;
- ii. Reduced reliance on imported fossil fuels and enhanced security of supply;
- iii. A Community Benefit Fund for local projects; and
- iv. Jobs and associated local investment.

From a local investment perspective, a Carbon Trust report from March 2020 looked at the jobs scenario from the development of 3.5GW of offshore wind. The report indicated this would create 2,500 local jobs in planning, development and construction, and provide 700 local, long-term jobs, as well as 20,000 wider employment opportunities during the lifecycle of the associated projects. The long-term jobs are associated with the O&M base, to be developed local to the project offering new business opportunities, particularly in the field of marine engineering, crew transfer, etc. These jobs will inevitably lead to additional spinoff benefits for local businesses such as hotels, cafes, sandwich shops, gyms, hardware stores, etc.

It is important to note that the report only looked at the scenario regarding the development of 3.5GW, whereas now our target is double that, so one can assume the numbers of jobs will also increase significantly from the numbers predicted in the report.

Regarding discounted electricity prices, wind generated power puts downward pressure on electricity prices as it is the cheapest form of new electricity generation in the market. Offshore wind has a higher capacity factor than onshore wind (meaning the offshore turbines will operate more regularly) due to the higher wind speeds offshore – accordingly, the offshore turbines will be more productive. It is also a predictable source of power as accurate weather forecasting allows the System Operator to manage the output. In recent years we have seen the cost of production from offshore wind fall dramatically right across Europe, especially so with our nearest neighbour in the UK. This has been driven by new technology, economies of scale and efficient supply chains. We have the opportunity to directly benefit from those cost reductions here in Ireland. The current spike in electricity prices is driven by factors largely beyond our control because we are so dependent on gas imports. The more of our own renewable energy that we produce from projects like Helvick Head, the more protected Irish consumers will be from very high prices for imported fossil fuels.

46. What is the rationale behind laying cables all the way to Aghada? Is it to do with the capacity of Eirgrid cabling to Knockraha?

The option of connecting to Aghada is a result of reviewing grid studies carried out by the Transmission System Operator EirGrid. The actual grid connection location will subject to agreement with EirGrid and a competitive auction process known as ORESS2.

47. We need wind energy now. Is the 7 year timeliness really necessary?

Offshore wind projects are very significant infrastructure projects that take significant time and funding to plan, develop, fund and deliver. These timelines for delivery of the Helvick Head project are based on the currently indicated timelines for:

- award of Maritime Area Consent (MAC) by the Maritime Area Regulatory Authority (MARA);
- receipt of planning consent from ABP;
- successful winning of a contract in ORESS2; and
- acquiring a grid connection from EirGrid while allowing necessary durations for development of the project design, preparation of necessary consents, procuring necessary equipment, raising finance and undertaking construction.

48. Who is the landscape industry you quote?

The Landscape Institute – the chartered body for the landscape profession. It provides a professional home for all landscape practitioners including landscape scientists, landscape planners, landscape architects, landscape managers and urban designers.

49. Can you explain why the area for the windmills has been chosen? What is the justification for having it there rather than further out? Can you also - if you haven't already - show us how it will look like from Helvick Head?

The project is in the early stages of development where a high level project design has been produced based on a desktop constraints analysis looking at such items as seabed characteristics, wind and ocean data, environmental impacts, existing marine infrastructure, shipping and navigation channels.

Fixed-bottom offshore wind turbines are only technically feasible in water depths of up to 60-70m. In waters deeper than that fixed-bottom turbines are not possible. Given the maturity of fixed-bottom technology, availability of the supply chain and overall system for LCoE for floating offshore wind relative to fixed foundation wind, it is anticipated that the government will seek to target fixed foundation wind as the primary mechanism to meet Ireland's 2030 renewables targets. Whilst ESB is in the early stages of development of a number of floating offshore wind projects, as a state-owned organisation our main focus has been on those projects that can be delivered by 2030, i.e. fixed-bottom.

Regarding what the project will look like from Helvick Head, photomontages were prepared and available in the virtual consultation room, open from 31st May to 11th July this year. As the project progresses, these will be updated and shared with the public.

50. An bhfuil aon láthair/calafort roghnaithe don ionad bainistíochta/has a preferred location/ locations been chosen for the onshore base? GRMA

Níl ag an bpointe seo mar tá sé luath go leor sa phróiseas, gan ceadúnas immeall trá faighte go fóill. Níl aon láthair/calafort fé chaibideal ó thaobh ionad bainistíochta (oibríocht agus cothábháil (operation & maintenance)). É sin ráite tá BSL/ESB tar éis roinnt inniúchadh a dhéanamh leis na calafort móra, mar shampla, calafort Corcaigh agus calafort Phoirt Láirge ó thaobh tógála na tuirbíní gaoithe.

51. In your presentation it appears you have identified your preferred site for the proposed wind farm. Would it not have been more appropriate to have discussed the location of this site with the fishing industry representatives before selecting a site?

Offshore wind projects, due to their scale and complexity, take approximately 10 years to get from concept project to fully operational. If we are to assist our country in reaching the 2030 target it was essential that we identified potentially feasible sites and commenced our aerial survey work on those. We fully appreciate this has not been ideal but are making efforts to get as informed as we can about the sites so that we can take all necessary steps to minimise impact. We have been engaging with the fishing industry and see that continuing throughout the project life cycle. For fishers to have as much of a say as possible on the final project design it is essential they also engage openly so that their specific concerns can be factored into the design.

52. We have a rare colony of kittiwakes in Dunmore East - how will the environmental survey take into account the impact of the wind farm on these endangered birds?

The project is undertaking a number of ornithology surveys to gather baseline data on the abundance and distribution of seabirds. This will be used to inform the assessment of impacts from the project on birds, including kittiwakes. During the environmental impact assessment process an assessment of the impacts on birds, including kittiwakes, will be undertaken. The results of the impact assessment are reported in the Environmental Impact Assessment Report (EIAR).

53. What are the environmental impacts of this windfarm?

Offshore wind farms can have a number of impacts, both positive and negative, on the environment. Potential impacts to the physical, biological and human environment are considered at all stages of the project and, where possible, negative impacts are avoided and positive impacts maximised throughout the project design. During the environmental impact assessment process a number of studies and surveys are undertaken to inform the understanding of the baseline environment. This information is then used together with the project design to predict the potential effects of the project on the receiving environment. The results of the impact assessment are reported in the Environmental Impact Assessment Report (EIAR). The project is currently at an early stage of development and the EIAR will be undertaken as the project progresses.

54. Why is the timeline so protracted? Seems there are some gaps between scoping and planning and between grant of planning and commencement of construction?

Offshore wind projects are very significant infrastructure projects that take significant time and funding to plan, develop, fund and deliver. These timelines for delivery of the Helvick Head project are based on the currently indicated timelines for:

- award of Maritime Area Consent (MAC) by the Maritime Area Regulatory Authority (MARA);
- receipt of planning consent from ABP;
- successful winning of a contract in ORESS2; and
- acquiring a grid connection from EirGrid while allowing necessary durations for development of the project design, preparation of necessary consents, procuring necessary equipment, raising finance and undertaking construction.

55. Another developer is proposing a site 30km offshore. Are you not capable of doing this?

ESB has no visibility on the site selection process for other developers but do note that within the portfolio of other developers there are a number of projects closer to shore targeting fixed bottom foundations. ESB is mindful to develop projects that present the lowest cost to the end consumer in addition to producing clean sustainable electricity, thus constructing in lower water depths and at closer proximity to shore help to address this while also satisfying other technical and planning requirements.

56. Could you publish what the expected revenue from the project will be?

The project will compete in a competitive Offshore Renewable Electricity Support Scheme auction where the lowest bidding pre-qualified offshore wind projects will be awarded contracts up to a predefined capacity that will be sized to meet government 2030 renewable electricity targets. This arrangement will ensure that bidding projects submit their most competitive offer and only the most cost competitive projects are successful to the ultimate benefit of the end consumer. ESB is not in a position to publish commercial information relating to individual projects bidding into competitive auctions.