



# Triton Knoll Offshore Wind Farm Limited Triton Knoll Electrical System



**Appendix 1 : Written  
Representation Response to  
Addlethorpe Parish Council**

**Date: October 2015**

**Appendix 1 of the Applicant's  
Response to Deadline 2**

Triton Knoll Offshore Wind Farm Limited

## Triton Knoll Electrical System

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to Addlethorpe Parish Council

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Deadline 2

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## 1. Addlethorpe Parish Council

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1.1 Addlethorpe Parish Council submitted a Written Representation for Deadline 1 (5th October 2015). The Representation raised a number of specific issues and concerns regarding potential impacts arising from the proposed development. The issues raised relate to the following categories:

1. The route chosen;
2. The environment;
3. The local roads;
4. The length of the construction phase;
5. Agriculture;
6. Dykes, drains and culverts;
7. Decommissioning; and
8. Carbon footprint

1.2 The Applicant's response to the matters raised in each of the categories is below, and broadly follows the structure of the questions posed within the Representation.

### The route chosen

1.3 The Applicant recognises that the route chosen and the choice of interface with the wider National Grid through connection at the Bicker Fen substation, is of great importance to the Parish Council.

1.4 The Applicant has described the site selection process in Volume 1, Chapter 4 *Site Selection and Alternatives* of the ES (Document Reference 6.2.1.4). Further detail is provided in the *Site Selection and Design Report* (document reference 8.17). The Applicant is confident that the concerns raised in the Written Representation with regards to site selection and cable routing are addressed by the Application documents referred to.

1.5 The Applicant directs the ExA to its response to Question **Alt 1.1** of the ExA's first written questions which explains that National Grid Electricity Transmission (NGET), as holder of a Transmission Licence (under the Electricity Act 1989) and the Applicant in

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planning the offshore transmission network have, amongst other things, two key obligations:

- a) Section 9 of the Electricity Act requires all licence holders to ensure that the design of all elements of the transmission network is economic and efficient as set out in paragraph 2.1.3 of Document Reference 8.18, *Interface Selection Assessment Report*.
  - b) Schedule 9 of the Electricity Act requires all licence holders to ensure that the natural environment is protected as set out in paragraph 2.1.12 of Document Reference 8.18, *Interface Selection Assessment Report*.
- 1.6 NGET considered the Transmission network reinforcement requirements for each of the existing National Grid substation (Interface Connection Point) options and then worked with the Applicant to undertake an economic and environmental appraisal of the relative merits of these options, including the likely offshore transmission network requirements. This fed into the overall appraisal, which also included engineering and environmental issues, and considered both the required reinforcements to NGET's network and the risks and effects relating to the Triton Knoll connection. That process led to the identification of Bicker Fen as the appropriate connection point for the proposed development.
- 1.7 The ExA is also referred to the draft Statement of Common Ground (SoCG) submitted by the Applicant at Deadline 1 with Boston Borough Council (BBC), East Lindsey District Council (ELDC) and Lincolnshire County Council (LCC) (Appendices 27, 28 and 30 (respectively) of the Applicant's response to Deadline 1) which indicate that those parties agreed that the interface point chosen is the best location for the connection of TKOWF to the wider national grid.
- 1.8 The Applicant has also provided clarification with regards to alternative connection points in its responses to Questions **Alt 1.1, 1.4, 1.5, 1.7** and **1.8** of the ExA's First Written Questions.
- 1.9 The Applicant is confident that the concerns raised in the Written Representation with regards to site selection and cable routing are addressed by the Application documents referred to.

## The Environment

- 1.10 The Applicant notes the concerns raised by the Parish Council regarding the impacts of the proposed development on the local environment, including farmland and the Lincolnshire Wolds Area of Outstanding Natural Beauty (AONB).
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1.11 The ExA is directed to Table 2 of Appendix 1 of the Applicant’s response to Deadline 1 on the impacts of the proposed development on farming practices, where it is made clear that the rights being sought and the attendant restrictions on activities within the cable corridor are proportionate and will not prevent the existing use of the land from continuing once the installation is complete. The Applicant draws the ExA’s attention to paragraph 5.85 in Volume 3, Chapter 5, *Land Use, Soils and Agriculture* (document reference 6.2.3.5), which clarifies:

*“There will be no permanent land take associated with the operational cable with the exception of the man-hole covers associated with the jointing bay link boxes and a raised area of land associated with the transition joint bays and permanent access track at the landfall.....”*

1.12 The Applicant also highlights that it will mitigate impacts on farm operations where reasonably practicable. For example, paragraph 1.108 in Volume 3, Chapter 1, *Onshore Project Description* of the ES (document reference 6.2.3.1) states:

*“When fencing the route, allowances will be made for private land access, stock crossing and relevant ecological constraints.”*

1.13 Further, Table 5-7 in Volume 3, Chapter 5, *Land Use, Soils and Agriculture* of the ES (document reference 6.2.3.5) states:

*“Where required, crossing points will be used in suitable places in order that livestock and vehicles can cross the working width.*

*Following the completion of all cable construction works, the land within the working width will be fully reinstated as near as practically possible to its former condition.*

*TKOWFL will discuss with affected parties and secure commercial terms with them including the loss of any ongoing payments or fines relating to agri-environmental stewardship schemes that may be affected by the permanent land restrictions or any cable maintenance or repair work.”*

1.14 The commercial agreements that the Applicant is currently negotiating with landowners also contain a commitment to compensate for any damage or loss caused as a direct result of the use of the cable corridor.

1.15 The Applicant will continue to liaise with landowners as the detailed design evolves so as to seek to accommodate site-specific arrangements, where reasonably practicable.

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- 1.16 All of the above measures will ensure that the impact on the businesses whose land the cable crosses will be minimised as far as possible during the construction and operation of the project.
- 1.17 Restoration of the land post-construction will allow for farming practices to continue - reinstated arable areas can be brought back into full agricultural use in the next sowing season following completion of construction. Other vegetation may require a temporary suspension of farming activities to allow it to become re-established, and the land restored to its former condition. Further detail is set out in paragraphs 5.57-5.59 of Volume 3, Chapter 5, *Land use, Agriculture and Soils* of the ES (document reference 6.2.3.5).
- 1.18 With respect to the AONB, the ES assessment (Volume 3, Chapter 2, *Landscape and Visual* of the ES ) undertaken confirms that, as the cable corridor has been routed to avoid the AONB there will be no direct impacts on this designated area. In addition, the potential for indirect impacts has been considered and it has been found that the impacts on the AONB from the development of the IEC 5 km away are not significant. This has been agreed with Natural England and recorded in a SoCG (please refer Appendix 23 paragraphs 4.50 – 4.56 to the Applicant’s response to Deadline 1).

### **The local roads**

- 1.19 The Applicant acknowledges the concerns that are raised concerning possible impacts of the proposed development on the local road infrastructure. It has undertaken a full assessment of the potential impacts of the proposed development on traffic and access. The Applicant directs the ExA to Table 2 of Appendix 1 of the Applicant’s Response to Deadline 1 which states that the potential impacts on traffic and access have been assessed in Volume 3, Chapter 9 *Traffic and Access* of the ES (document reference 6.2.3.9). The assessment presented therein concludes at paragraph 9.189 that *“there are no significant adverse effects associated with the construction, operation or decommissioning phases of the proposed development.”*
- 1.20 The Applicant recognises that the management of construction traffic is important and has included a specific requirement in the draft DCO (document reference 3.1) dealing with this. Requirement 18 secures a construction Traffic Management Plan (TMP) and a Contractor Travel Plan that must be agreed with the appropriate local planning authority (LPA) (ELDC or BBC) and adhered to during construction. The Applicant submitted an Outline TMP with the application (document reference 8.9) that includes matters such as the routing of construction vehicles, pre- and post-construction route surveys, road crossings, management of abnormal loads and pedestrian management. The implementation of the TMP will ensure that construction traffic is properly regulated and controlled by the relevant planning authority.

- 1.21 Both BBC and ELDC have agreed with the conclusions of the assessment set out within the ES and the appropriateness of the mitigation secured in the draft DCO (see the SoCGs with BBC) (Appendix 27 of the Applicant's response to Deadline 1) and with ELDC (Appendix 28 of the Applicant's response to Deadline 1) which conclude in paragraphs 10.9 and 10.8 respectively that;

*“With respect to mitigation measures it is agreed that in accordance with paragraph 9.189 of Volume 3 Chapter 9 of the ES, given there are no significant adverse effects predicted on traffic and access as a result of the construction, operation and decommissioning of the project, no further specific mitigation is required beyond that which is already embedded into the project design and secured through the management plans that will be secured under the DCO”*

### **The length of construction time**

- 1.22 With respect to the concerns raised over the duration of construction works, the Applicant highlights Table 1-2 of Volume 3, Chapter 1, *Onshore Project Description* of the ES which explains that at the Intermediate Electrical Compound (IEC) there will be up to 46 months of activity over a 54 month period and that at the substation there will be up to 65 months of activity over a 71 month period with periods of inactivity during off-site activities such as survey reporting and contract tendering, which will be carried out at the pre-construction stage. The intensity of vehicle movements will vary throughout both the construction period and the working day. As noted in the Applicant's response to Question EOn 1.27 of the ExA's first written questions, it is not possible at the current time to provide any further detail on the timetable for the construction of the onshore cable route than that presented in Table 1-2 of Volume 3, Chapter 1 of the ES.
- 1.23 Once the detailed design process at the pre-construction phase is complete, the Applicant will be able to prepare a phasing programme which will govern entry onto land, timescales for completion of specified works and remediation/restoration thereafter (as appropriate), to ensure that the project is carried out in a co-ordinated manner and that disruption to landowners is kept to a minimum. However, because the detailed design work is yet to be undertaken, the Applicant must currently retain flexibility in terms of the timing of specified works within an overall construction period.
- 1.24 The detailed design work and procurement will be carried out after any consent is granted, which will enable and ensure that the most suitable technology available at the time can be utilised for the proposed development.

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## Agriculture

- 1.25 The Parish Council raises queries concerning the area of agricultural land required for the scheme and the use of the land following reinstatement.
- 1.26 The Applicant's response to Question SE 1.12 of the ExA's first written questions highlights that the Applicant shares a common interest with landowners to locate joint pits at field boundaries in order to minimise impacts of the proposed development on landuse following reinstatement. The Applicant's proposal to landowners for private treaty agreements contains the commitment to locate cable joints at field boundaries where reasonably practicable.
- 1.27 Impacts on existing agricultural operations are addressed in paragraphs 5.54 to 5.118 of Volume 3, Chapter 5, *Land Use, Soils and Agriculture*.
- 1.28 The Written Representation refers to the circuits being laid "900 mm below the surface". The Applicant would like to make it clear that in fact the cable ducts (containing the circuits) are to be buried with protective cable marker warning boards laid a minimum of 75 mm above the cable ducts. Those cable marker boards are also to be buried at an indicative depth of 900 mm below the top of the subsoil layer, rather than the surface. This is confirmed in paragraph 1.131 on Volume 3, Chapter 1, *Onshore Project Description* of the ES which states:
- 1.29 *"In most cases the protective boards themselves will be laid at an indicative depth of 900 mm below the top of the subsoil layer in agricultural land. In some areas the boards may be deeper in order for circuits to be located below identified field drains to allow drainage maintenance access. In other areas, such as where the route crosses existing utilities and services, it may be necessary for the ducts to be installed at a shallower depth."*
- 1.30 The Applicant's response to Question SE 1.12 of the ExA's first written questions confirms that this approach will ensure that the cables are buried to a depth which will allow normal agricultural operations to continue once the land has been reinstated.
- 1.31 The Applicant would refer the ExA to paragraph 6.51 and Figure 6.1 of Volume 3, Chapter 6, Onshore Geology, Hydrogeology and Ground Conditions (document reference 6.2.3.6) of the ES which notes that the IEC appears to be located over tidal flat deposits (TFD). These consist of clay and silt and which will have a high water content for their full extent (up to 15m thickness). These deposits are prone to subsidence over time following loading by heavy objects such as IEC components which squeezes the water out.
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- 1.32 Appropriate ground investigations will be undertaken to allow for the design of component foundations therefore negating potential risks from subsidence (i.e. the component is supported by the pile founded in the bedrock and not by the ground). These investigations will include relevant geotechnical testing to allow a suitable foundation option to be devised to make the development safe.
- 1.33 Historic buildings will have been built directly onto the TFD (i.e. not piled) and will over time have been subject to subsidence. The construction of modern infrastructure will be to modern standards and therefore risk of subsidence is managed through appropriate design.
- 1.34 The Applicant directs the ExA to its response to Question SE 1.1 of the ExA's first written questions which refers the ExA to paragraph 5.57 in Volume 3, Chapter 5, Land Use, Soils and Agriculture which states:
- "...Following completion of the works, the working width will be fully reinstated as near as practically possible to its former condition. Full reinstatement will allow normal farming practices to continue (i.e. crop growth, ploughing, machine loads)."*
- 1.35 This means that the Parish Council's concerns regarding the possible effects of the proposed development on large areas of agricultural land can be allayed.

### **Dykes, drains and culverts**

- 1.36 The Parish Council has raised concerns about the possible impacts of the proposed development on the effectiveness of the local dykes, drains and culverts to protect population centres from flood events.
- 1.37 The Applicant directs the ExA to its response to Question SE 1.11 of the ExA's first written questions which outlines the Applicant's commitment to ensuring that drainage systems are properly reinstated following construction works using the following mechanisms:
- The Applicant's proposal to landowners for private treaty agreements includes the offer to reinstate drainage systems to the landowner's reasonable satisfaction (and to the reasonable satisfaction of the occupier, if applicable and where this does not conflict with the landowner's reasonable satisfaction), ensuring that the drainage system is put back in a condition that is at least as effective as the previous condition.
  - The Applicant has offered to commit to adhering to best practice for field drainage installations when restoring drainage and to take into account site-specific conditions.

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- The Applicant has offered to consult with the landowner, prior to the installation of the cables, on the design of any land drainage works required, both for the installation of the cables and on the design of any land drainage works required for the subsequent restoration of the land.
  - The Applicant has offered to employ a suitably qualified drainage consultant and/or ensure that the appointed cable installation contractor employs the services of a suitably qualified drainage expert to act as an independent drainage expert prior to the installation of the cables.
  - The Applicant has offered the landowner the opportunity to inspect the land drainage works as they progress, and to provide records of existing and remedial drainage after installation.

1.38 The Applicant's response to Question SE 1.11 further highlights where the application documents also deal with drainage. Specifically, these are as follows:

- Paragraph 5.3 in Appendix 5 to the *Outline Code of Construction Practice (CoCP)*, *Outline Soil Management Plan (SMP)* (document reference 8.7.5) states:

*“Existing land drains, where encountered during construction, will be appropriately marked. Temporary drainage will be installed within the working width to intercept existing field drains and ditches in order to maintain the integrity of the existing field drainage system... Where necessary, existing land drains will be replaced to ensure continued agricultural use.”*

- Paragraph 5.4 in Appendix 5 to the *Outline CoCP*, *Outline SMP* (document reference 8.7.5) states:

*“Particular care will be taken to ensure that the existing land drainage regime is not compromised as a result of construction. Land drainage systems will be maintained during construction and reinstated on completion.”*

- Paragraph 2.5.1 in Appendix 1 to the *Outline CoCP*, *Outline CMS* (document reference 8.7.1) states:

*“Land drains within the cable route, which may be temporarily affected by construction operations, will also be restored following completion of construction.”*

- Paragraph 1.120 in Volume 3, Chapter 1, *Onshore Project Description* of the ES (document reference 6.2.3.1) states:

*“Header or interceptor drains will be connected to existing field drains to maintain effective field drainage for the adjacent farmland during the construction phase. The details of temporary field drainage will be agreed with each landowner prior to installation.”*

- Paragraph 1.132 in Volume 3, Chapter 1, *Onshore Project Description* of the ES (document reference 6.2.3.1) states:

*“Header or interceptor drains will be removed and new sections of field drainage pipe installed. The details of the reinstated drainage will be agreed with landowners prior to installation and may be witnessed by landowners or their agents.”*

1.39 The Applicant considers that this approach demonstrates that the potential impacts on land drainage have been appropriately addressed in the design and proposed construction of the onshore cable route.

1.40 Further information that may be of interest to the Parish Council in relation to flood risk can also be found in Table 2 of Appendix 1 of the Applicant’s Response to Deadline 1 which addresses the following areas of concern:

- Impact on sea defences
  - The impact of the proposed development on sea defences has been assessed in Volume 3, Chapter 7, *Hydrology and Flood Risk* of the ES, supported by Volume 5, Annex 7.3, *Flood Risk Assessment* of the ES (document reference 6.2.5.7.3).
  - The assessment concludes that, following the implementation of trenchless techniques to lay the cable ducts under the existing sea defences at the landfall to minimise any impacts on them, there are no significant adverse effects arising from the proposed development on sea defences.
- Impact on Flooding located in Flood Zone 3
  - Volume 5, Annex 7.3, *Flood Risk Assessment (FRA)* of the ES (document reference 6.2.5.7.3) has assessed the potential flood risks arising from the proposed development.

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- Table 7-10 of Volume 3, Chapter 7, Hydrology and Flood Risk of the ES (document reference 6.2.3.7) provides detail of the mitigation measures that have been embedded into the project design in order to minimise potential hydrology and flood risk impacts. These include the use of trenchless techniques during the construction of the cable route to minimise impacts on the crossing of certain watercourses.
  - Requirement 10 of the draft DCO (document reference 3.1) requires a surface water drainage scheme to be submitted and approved by the lead local flood authority, the drainage boards and the relevant planning authority. The FRA includes a surface water drainage strategy which outlines the principles which the final scheme shall be in accordance with. The surface water drainage scheme will minimise risk of flooding. It should be noted that the Environment Agency has agreed in its SoCG that the FRA proposes suitable mitigation measures that will reduce the risk of flooding which have been secured in the Application (see paragraph 4.35 of Appendix 29 to the Applicant's response to Deadline 1
- Impact on Ditches and Dykes
    - Volume 3, Chapter 7, Hydrology and Flood Risk of the ES (document reference 6.2.3.7) has assessed potential impacts on all watercourses, including drains and ditches, within the study area for the proposed development.
    - The Applicant is in discussions with the local drainage authorities (the internal drainage boards (IDBs)) in relation to the drains under their operation. A draft SoCG between the Applicant and the IDBs has been submitted at Appendix 32 of the Applicant's response to Deadline 1 and sets out the agreements made with them. At present the parties are agreed that the use of trenchless techniques or other mitigation measures proposed for the crossing of IDB watercourse will avoid significant impacts on those watercourses. Discussions are ongoing concerning non-IDB watercourses.
    - Paragraphs 1.117 – 1.133 of Volume 3, Chapter 1, Onshore Project Description of the ES (document reference 6.2.3.1) provides detail of open cut trenching and cable installation techniques, including details on how field drainage will be dealt with.
    - Paragraphs 5.3 and 5.4 of the Outline SMP (document reference 8.7.5) submitted with the application provides further details of how the
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appointed contractor will maintain the integrity of the land drainage systems.

## De-commissioning

- 1.41 The Parish Council raises concerns regarding the proposals for decommissioning of its proposed development.
- 1.42 The Applicant can confirm that its environmental assessment of the proposed development as presented within the ES assesses all stages of development; construction, operation and decommissioning. Impacts associated with decommissioning have been predicted and assessed within each of the ES chapters.
- 1.43 The Applicant is required by the provisions of the Energy Act 2004 to submit a decommissioning programme for the offshore works and this is referred to in Requirement 4 of the draft DCO and the Applicant's response to Question DCO 1.34 and Question DCO 1.49 of the ExA's first written questions submitted at Deadline 1. In respect of the decommissioning of the onshore works, this is secured by Requirement 21 of the draft DCO. Providing this scheme within 6 months of the cessation of commercial operation of the onshore works ensures that it takes account of relevant legislation and best practice at the time. In light of these statutory requirements the bond suggested by the Parish Council is not required.

## Carbon Footprint

- 1.44 The Applicant notes the comment made in relation to the carbon footprint of concrete use. It is suggested that the carbon produced in the production of the concrete will be greater than the carbon savings from wind energy produced by the TKOWF.
- 1.45 A useful comparison in this instance will be a number of academic and industry studies that have been carried out over a period of time assessing the carbon footprint payback period for onshore wind turbines. That is, the period of time that it takes for a wind turbine to save the carbon expended in its construction and operation. Each of these assessments includes all construction materials associated with the erection of the turbine, including its concrete foundations:

### 1. CSE:

- 1.46 The (UK) Centre of Sustainable Energy quotes a figure of the average "energy payback time" for a wind turbine is **3 to 6 months**. The average wind turbine is expected to generate at least 20-25 times the amount of energy required to manufacture, install, operate and decommission it.

- 1.47 See the Centre for Sustainable Energy report “Common Concerns About Wind Power” (May 2011) pages 1-2:  
[http://www.cse.org.uk/downloads/file/common\\_concerns\\_about\\_wind\\_power.pdf](http://www.cse.org.uk/downloads/file/common_concerns_about_wind_power.pdf)

## 2. IPCC:

- 1.48 The Intergovernmental Panel on Climate Change (established by the United Nations) issued a report in 2011 “Renewable Energy Sources and Climate Change Mitigation”. Chapter 7 (“Wind Energy”) states: *“The major environmental benefits of wind energy result from displacing electricity generation from fossil fuel-based power plants, as the operation of wind turbines does not directly emit greenhouse gases or other air pollutants. Similarly, unlike some other generation sources, wind does not require significant amounts of water, produces little waste and requires no mining or drilling to obtain fuel”.*
- 1.49 Chapter 7, p570: [http://srren.ipcc-wg3.de/report/IPCC\\_SRREN\\_Ch07.pdf](http://srren.ipcc-wg3.de/report/IPCC_SRREN_Ch07.pdf)

## 3. Government response:

- 1.50 In a debate on wind farms on 6 March 2015, the Minister of State for Energy Matthew Hancock (Conservative) responded at length to the question of wind energy’s carbon savings. He said:

*“Another issue that is often raised is whether wind farms actually deliver carbon savings. Wind power has one of the lowest carbon footprints compared with other forms of electricity generation. Work by the Parliamentary Office of Science and Technology published in 2011 looked at the carbon footprint of different forms of electricity generation. This carbon footprint assessment was calculated according to the “life cycle assessment” which aims to account for the total quantity of greenhouse gas emitted over the whole life cycle of a product or process—the making, transporting and erecting of wind farms, as well as their operation. The study found that there was a footprint of 488 grams of CO2 equivalent per kWh for a combined cycle gas turbine and 5.2 grams of CO2 equivalent per kWh for installations (i.e. offshore wind farms) off the coast of Denmark. Further studies demonstrate that, even taking into account the whole life time impact on carbon emissions, wind farms have an incredibly low impact.”*

- 1.51 See: <http://www.theyworkforyou.com/debates/?id=2015-03-06b.1216.0#g1222.0>