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Cc: [Louise Staples \(Louise.Staples@nfu.org.uk\)](mailto:Louise.Staples@nfu.org.uk)
Subject: NFU and LIG submissions to the hearings on 5 February 2019
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Attachments: [image004.png](#)
[image005.png](#)
[Vanguard Environmental Issues Tuesday 5th February 2019 V1 13.2.2019 \(002\) \(002\).pdf](#)
[Vantage points for substation.pdf](#)

Dear Sirs

Please find attached the written submission on behalf of the NFU and LIG in regard to the Issue Specific Hearing – Onshore Environmental Matters – Tuesday 5th February 2019

If you do need anything else please do contact me.

Kind regards

Jane

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PLANNING ACT 2008

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**WRITTEN SUBMISSIONS OF NFU AND LIG REGARDING THE NORFOLK VANGUARD
OFFSHORE WIND FARM DEVELOPMENT CONSENT ORDER 201 [...]**

PLANNING INSPECTORATE REFERENCE NO EN010079

**SUBMISSIONS OF NATIONAL FARMERS UNION AND THE LAND INTEREST GROUP ON
THE – ONSHORE ENVIRONMENTAL MATTERS ON 5 FEBRUARY 2019**

DATE 14th FEBRUARY 2019

1.0 Introduction

1.1 Submissions on behalf of the National Farmers Union (“NFU”) and the Land Interest Group (LIG) in respect of the application for a Development Consent Order (DCO) by Norfolk Vanguard Limited for the Norfolk Vanguard Offshore Wind Farm. The NFU is making a case on behalf of its members and LIG its clients, who are affected by the DCO.

2.0 Land Use and Recreation: Update on discussion between Applicant and those with Farming Interests

2.1 Voluntary Negotiations: NFU and LIG confirmed that voluntary negotiations are ongoing and that Heads of Terms have been signed by the majority of landowners and occupiers. We are though still waiting to see a draft Option and Easement to progress voluntary negotiations further.

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- Detail on how field drainage will be reinstated before the sub and top soil is reinstated on these 150m sections?
- When will the joint bays be constructed and what is the land area required for this construction?
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Further information is required:

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such as mole ploughing as this cultivation will be deeper than normal every day agricultural operations.

- 8.0 Compound Sites:** The NFU and LIG would like to see specific details recorded in the DCO as to what each compound site/mobilisation unit will be used for. The use will then be binding under the DCO and this will prevent an activity taking place which is not authorised.
- 9.0 Haul Road/Running Track:** The NFU and LIG would like further clarification on whether the running track will remain in place after the 150m sections of ducting have been reinstated or will the running track be removed at the same time? If it is to remain in place how long will this be for? It is not clear and there seems to be conflicting statements in Chapter 5: Project Description as well as the outline CoCP paragraph 2.5.5.
- 10.0** Please see Appendix E of the plan showing the vantage points re the Converter Station as requested by the ExA.
- 11.0 Crossing Point Orsted/Vattenfall:** The NFU and LIG believe that it has still not been stated clearly how construction of the different cables will take place at the crossing point with the Orsted development in two phases and the Vanguard and Boreas proposed developments.

Appendix A: Agricultural Liaison Officer

- 1.1.** The Agricultural Liaison Officer (ALO) will be appointed by the Applicant prior to the commencement of pre-construction activities and will be the prime contact for ongoing engagement about practical matters with landowners, occupiers and their agents before and during the construction process. There may be more than one ALO if required.
- 1.2.** The ALO will have relevant experience of working with landowners and agricultural businesses and will have knowledge of the compulsory acquisition process (if required) and working on a linear infrastructure project.
- 1.3.** The ALO (or their company) will be contactable from 7am to 7pm during the construction phase to landowners, agents and occupiers and will provide 24-hour team or company contact details for use in the event of emergency.
- 1.4.** Post-construction the ALO will remain in place for up to one year in order to manage remediation issues.
- 1.5.** After that year the Applicant will ensure that ongoing contact details are provided in order for landowners and occupiers to seek consent, if required, in respect of restrictive covenants for the lifetime of the project or to highlight any defects. Information in relation to the process of management of restrictive covenants will be issued to landowners and occupiers upon any change in the person/s responsible for the process on behalf of the Applicant or the OFTO.
- 1.6.** The ALO will have responsibility for liaising with landowners, agents and occupiers in respect of the following:
 - Coordinating drainage surveys and sharing pre and post-construction drainage schemes with landowners or occupiers in advance for their consideration;
 - Discussing the location, grouping and marking of link boxes, including why they are subject to overriding constraints (such as cable lengths and environmental constraints), with the landowner/occupier;
 - Coordinating the provision of a detailed pre-construction condition survey to include a soil survey, to be included in CoCP, as well as a record of condition of the following elements:
 - existing crop regimes;
 - the position and condition of field boundaries;
 - the condition of existing access arrangements;
 - the location of private water supplies (as far as reasonable investigations allow);
 - the type of agricultural use taking place;
 - the yield of crops;
 - the quality of grazing land; and
 - the existing weed burden.
 - Advising on risks relating to the translocation of soil diseases and ensuring appropriate protective provisions are implemented;

- Ensuring that landowners and occupiers are consulted in respect of requirements relating to field entrances and accesses across the construction strip and land-locked or severed land parcels;
- Arrange quarterly meetings with agent representatives of landowners;
- Undertake pre-construction and day-to-day discussions with affected parties to minimise disruption, where possible, to existing farming regimes and timings of activities;
- Undertake site inspections during construction to monitor working practices and ensure landowners' and occupiers' reasonable requirements are fulfilled;
- Discussing and agreeing reinstatement measures following completion of the works

Appendix B: Field Drainage

Irrigation

- 1.0 Details of the irrigation system on each land holding will be gathered during the detailed design stage and irrigation plans will be developed to inform the management of agricultural land drainage during construction. The Agricultural Liaison Officer will be responsible for consulting with each individual landowner to obtain the relevant information and to be a point of contact to report concerns regarding irrigation systems during construction. The plans will include the following information:
- Location of boreholes and water supplies used by each farmer;
 - Irrigation or impoundment licence granted by the EA; and
 - System of irrigation applied and the location of irrigation network for each field.

Agricultural Land Drainage

- 2.0 Particular care will be taken to ensure that the existing land drainage system is not compromised as a result of construction. Land drainage systems will be maintained during construction and reinstated on completion.
- 2.1 The ALO will coordinate drainage surveys to establish the existing drainage position including any related farm drainage that may be affected by the scheme. The services of a suitably qualified drainage consultant will be employed by the Applicant to act as a drainage expert during the detailed design process and liaise with landowners or occupiers (through the ALO) to consult on the pre and post drainage schemes required. This will include the design of any land drainage works required during construction, and on the design and timing of any land drainage works required for the subsequent restoration of the land. This process will take due regard of any local and site-specific knowledge.
- 2.2 Subject to the consultation existing agricultural land drains, where encountered during the construction of each phase, will be appropriately marked. The location of drains cut or disturbed by the construction works will be photographed, given a unique number and logged using GPRS coordinates. The actual condition and characteristics (e.g. depth of installation, pipe type and diameter) of the existing drainage will also be recorded upon excavation.
- 2.3 During the construction works, temporary drainage will be installed either side of the cable trenches, within the onshore cable corridor working width, to intercept existing field drains and ditches in order to maintain the integrity of the existing field-drainage system during construction and ensure existing flow is not channelled by the onshore cable corridor. Such measures will also assist in reducing the potential for wet areas to form during the works, thereby reducing the impact on soil structure and fertility. Drainage systems however will not be installed into areas where they are not currently present, e.g. environmental wetlands.
- 2.4 Any field drainage intercepted during the cable installation will either be reinstated following the installation of the cable or diverted to a secondary channel. Landowners and occupiers will be informed of the design of drainage works required during construction and following installation of the cables and associated works, including: pipe layout, falls, dimensions and outfalls (if required). The drainage would be reinstated in a condition that is at least as effective as the previous condition and will follow best practice for field drainage installations taking into account site specific conditions.
- 2.5 Where it is reasonable for the reinstatement of drainage to involve works outside of the order limits it will be done subject to the agreement of the landowner.

- 2.6 Landowners and occupiers will be provided with the opportunity to inspect land drainage works as they progress, subject to health and safety considerations. Furthermore, records of existing and remedial drainage will be maintained by the Applicant with copies provided to the Landowner (and the Occupier, if applicable) following the completion of construction works in each phase.
- 2.7 A dispute resolution process will be established including the appointment of a jointly agreed Independent Expert for drainage design and implementation, where required. Where agreement cannot be reached on the appointment of the expert the matter will be referred to the President of the Institution of Civil Engineers.

Appendix C: Soil Survey and Record of Condition

- 1.1** Pre-construction detailed soil survey work will be undertaken by a competent person (e.g. a soil scientist) in order to produce specific soil resource topsoil and subsoil unit plans and restoration specifications for areas of agricultural land within individual land holdings that will be occupied by Vanguard. These surveys will form the basis of the pre-construction condition assessments of the land prior to soil stripping operations and will be used to monitor the progress of soil handling and restoration operations.
- 1.2** The survey work will include the identification of the physical characteristics of profiles at a standard density of 100 m intervals (with additional profiles examined where the 100 m grid sampling does not enable a suitable density of sampling in an agricultural enclosure that will otherwise be missed.). Soil pits will also be examined at appropriate locations to provide additional detail on soil structure and stoniness. The survey will provide information on the following soil physical characteristics:
- Soil horizon depths for topsoil and subsoil horizons;
 - Soil textures of all horizons;
 - Soil colour;
 - Stone contents, estimated from augering, confirmed by soil pit excavation/and or sample analysis;
 - Presence and characteristics of mottling, a soil wetness indicator;
 - Presence of manganese concretions, a soil wetness indicator;
 - Identification of gleyed horizons;
 - Identification of slowly permeable layers; and
 - Identification of impenetrable rock layers.
- 1.3** **Record of Condition** will be undertaken and will include the following:
- Existing crop regimes
 - The position and condition of existing field boundaries
 - The condition of existing access arrangements
 - The location and type of existing private water supplies
 - The yield of crops
 - The quality of grazing land
 - The existing weed burden

Photographs and section drawings should be included in the record of condition and it should be provided to the landowner and occupier, for agreement, prior to entry to the landholding.

Appendix D: Soil Storage and Treatment

Reasoning

- When soil is stored in a bund it is hard to stop surface erosion and control weed growth
- Soil takes time to recover its structure and settle into a workable medium with reasonable drainage properties. The sooner it is restored to the working width the sooner the recovery process can start.
- Over the entire length of the route this would be a significant area of land being returned to good condition at earliest opportunity with option to crop, by agreement between the parties, and this avoid business disruption and reduce claims against the Applicant.
- Cover cropping the restored topsoil with specialist soil structuring cover crops will help draw moisture from the soil, improve structure, reinstate natural drainage channels and retain nutrients.
- Long term exposure of the subsoil to rain can cause damage and smearing of the upper layers and compaction in the lower layers. This element of the soil profile would normally be protected by topsoil and it is not in its nature to be directly exposed to rain.
- Impeded drainage on an exposed subsoil surface can result in ponding of rainwater leading to excessive periods of wetness making the soil more vulnerable to damage.
- Cables will be pulled in from the joint bays and if they fail they will be pulled out at the joint bays. The only reason for accessing the duct run between the joint bays should be if the cable fails and melts the ducts, or if the cable won't install properly due to a blockage in the duct. The following comments apply:
 - In the event of a heat event resulting in a damaged duct it is accepted that localised repair would be needed using the same working methodology of strip, store, replace, restore, albeit on a smaller scale and using the haul road for access.
 - If the ducts are installed properly there should be no issues with pulling the cables through.
 - If a duct needs to turn a tight bend and there is a risk of installation problems this area can remain open as there would be good technical and engineering reasons for doing so.
 - The topsoil would not be reinstated within an agreed distance of each side of joint bay giving room to work at the point.
- The provision for the topsoil to remain in a bund where there are good technical and engineering reasons allows the Applicant to avoid reinstating where they reasonably believe there could be need to access the ducts during cable installation and testing.

Provisions for Long Term Strip and Bund

- Dudgeon Offshore Wind and East Anglian One have shown that long term storage of topsoil can lead to loss of topsoil via surface runoff into the working area and surrounding land.
- Weed infestation of the bunds has also been a problem that requires use of non-selective herbicides to control and mechanical weeding.
- Stabilisation of the bund with a green cover is a good way to stabilise the soil surface and create a dominant green cover to suppress weeds.
- Establishing a green cover is difficult due to the recently disturbed nature of the soil, the profile of the bunds (high risk of seed wash off) and increased vulnerability to climatic conditions.

- Hydroseeding has been shown to effectively combat the problems noted above, particularly when used in conjunction with biodegradable hessian type erosion control blankets.
- Ensuring the green cover is topped regularly and not allowed to see can achieve stabilisation of the bund cover and avoids problems with weed inundation to valuable arable land.
- Vertically entrenched silt fences protect the bund from surface runoff onto the exposed subsoil working area, the surrounding farmland and surrounding watercourses.

Soil Specialist

- Provision of a soil specialist to act as a 3rd party referee between contractors and the landowner ensures work can proceed in a timely way whilst long term soil damage can be minimised.
- The landowner and contractors will at times have directly competing interests and each party is liable to take an entrenched point of view. The soil specialist can give an independent view so the landowner knows that if the soil is damaged he will have a valid and justified claim, and the contractor can avoid situations where they are interrupted because the landowner perceives the conditions to be unsuitable to work.

Preferred Working Methodology

NFU and LIG's preferred working methodology is as follows:

- Topsoil stripped and stored in a bund
- Subsoil trenched and stored in separate bund to topsoil
- Plastic ducts installed
- Subsoil replaced
- Topsoil replaced within 3 months of stripping where following conditions are met:
 - Subsoil is dry and in a suitable condition to take topsoil reinstatement
 - Landowner does not reasonably object to reinstatement
- Restored working width will be seeded with a cover crop of an agreed species mix for the soil type, land use and time of year.
- Applicant will not be obliged to restore the working area within an area at an agreed distance either side of a jointing bay, HDD launch area, or any other area where for good technical and engineering reasons it is not appropriate to do so. Such as where cables go around a bend, or archaeology, or cross existing/proposed infrastructure.

Following partial restoration of the working width Applicant will not:

- Be obliged to install the post scheme drainage works until such time as programmed on the wider scheme
- Be obliged to hand back possession of the working area if they do not reasonably consider it appropriate to do so.
- Be obliged to pay crop loss or any other loss arising from the farmer choosing to commercially crop the partially restored working area.

- The restoration of the topsoil will not be full restoration and the conditions associated with full restoration do not have to be met until the appropriate time as agreed.
- In the event that the topsoil will be stored in excess of 3 months NFU and LIG would like the following conditions to be included:
 - Topsoil and subsoil are kept separate
 - Entrenched vertical entrapment fences (Silt Fences) to be installed around the bund as per EA/SEPA Pollution Prevention Guidelines.
 - Hydroseeding of bunds with an agreed/appropriate grass mix at soonest opportunity recommended by specialist contractors.
 - Installation of biodegradable Geo-Jute Erosion Control Blanket to stabilise the surface and give a 'key' for the Hydroseeding growing medium.
 - Assessment to be carried out of where water may pond on subsoil in the stripped working area and, where appropriate, means to drain this water away installed through the bund if necessary.
 - Dewatering pits to be located on the haul road side of the working area.
 - Applicant has confirmed that a soil specialist would be appointed as stated in paragraph 87 of the outline CoCP. NFU and LIG request that ALO works along side the soil expert. Furthermore NFU and LIG request the Drainage Consultant is also party to this monitoring during the works to have an input into the preparation, installation and reinstatement of the option area with a brief as follows:
 - To agree when conditions in the option area are suitable for operation of the works specifically required at the time of assessment.
 - To assess when work can recommence in the following situation:
 - There has been more than 12mm of rain falling on the corridor in any preceding 24 hour period.
 - There has been more than 20mm of rain falling on the corridor in any preceding 96 hour period.
 - Where the thresholds specified above have not been met but long term adverse weather conditions have lead to cumulative wetting of the option area.
 - Where the Grantor considers the conditions to be unsuitable for working without unavoidable long term soil damage.
- The advice of the soil specialist will be binding on both parties.

Appendix E: Vantage points re the Converter Station

See attached plan.

Key



Vantage point

PLANNING ACT 2008

INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

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such as mole ploughing as this cultivation will be deeper than normal every day agricultural operations.

- 8.0 Compound Sites:** The NFU and LIG would like to see specific details recorded in the DCO as to what each compound site/mobilisation unit will be used for. The use will then be binding under the DCO and this will prevent an activity taking place which is not authorised.
- 9.0 Haul Road/Running Track:** The NFU and LIG would like further clarification on whether the running track will remain in place after the 150m sections of ducting have been reinstated or will the running track be removed at the same time? If it is to remain in place how long will this be for? It is not clear and there seems to be conflicting statements in Chapter 5: Project Description as well as the outline CoCP paragraph 2.5.5.
- 10.0** Please see Appendix E of the plan showing the vantage points re the Converter Station as requested by the ExA.
- 11.0 Crossing Point Orsted/Vattenfall:** The NFU and LIG believe that it has still not been stated clearly how construction of the different cables will take place at the crossing point with the Orsted development in two phases and the Vanguard and Boreas proposed developments.

Appendix A: Agricultural Liaison Officer

- 1.1.** The Agricultural Liaison Officer (ALO) will be appointed by the Applicant prior to the commencement of pre-construction activities and will be the prime contact for ongoing engagement about practical matters with landowners, occupiers and their agents before and during the construction process. There may be more than one ALO if required.
- 1.2.** The ALO will have relevant experience of working with landowners and agricultural businesses and will have knowledge of the compulsory acquisition process (if required) and working on a linear infrastructure project.
- 1.3.** The ALO (or their company) will be contactable from 7am to 7pm during the construction phase to landowners, agents and occupiers and will provide 24-hour team or company contact details for use in the event of emergency.
- 1.4.** Post-construction the ALO will remain in place for up to one year in order to manage remediation issues.
- 1.5.** After that year the Applicant will ensure that ongoing contact details are provided in order for landowners and occupiers to seek consent, if required, in respect of restrictive covenants for the lifetime of the project or to highlight any defects. Information in relation to the process of management of restrictive covenants will be issued to landowners and occupiers upon any change in the person/s responsible for the process on behalf of the Applicant or the OFTO.
- 1.6.** The ALO will have responsibility for liaising with landowners, agents and occupiers in respect of the following:
 - Coordinating drainage surveys and sharing pre and post-construction drainage schemes with landowners or occupiers in advance for their consideration;
 - Discussing the location, grouping and marking of link boxes, including why they are subject to overriding constraints (such as cable lengths and environmental constraints), with the landowner/occupier;
 - Coordinating the provision of a detailed pre-construction condition survey to include a soil survey, to be included in CoCP, as well as a record of condition of the following elements:
 - existing crop regimes;
 - the position and condition of field boundaries;
 - the condition of existing access arrangements;
 - the location of private water supplies (as far as reasonable investigations allow);
 - the type of agricultural use taking place;
 - the yield of crops;
 - the quality of grazing land; and
 - the existing weed burden.
 - Advising on risks relating to the translocation of soil diseases and ensuring appropriate protective provisions are implemented;

- Ensuring that landowners and occupiers are consulted in respect of requirements relating to field entrances and accesses across the construction strip and land-locked or severed land parcels;
- Arrange quarterly meetings with agent representatives of landowners;
- Undertake pre-construction and day-to-day discussions with affected parties to minimise disruption, where possible, to existing farming regimes and timings of activities;
- Undertake site inspections during construction to monitor working practices and ensure landowners' and occupiers' reasonable requirements are fulfilled;
- Discussing and agreeing reinstatement measures following completion of the works

Appendix B: Field Drainage

Irrigation

- 1.0 Details of the irrigation system on each land holding will be gathered during the detailed design stage and irrigation plans will be developed to inform the management of agricultural land drainage during construction. The Agricultural Liaison Officer will be responsible for consulting with each individual landowner to obtain the relevant information and to be a point of contact to report concerns regarding irrigation systems during construction. The plans will include the following information:
- Location of boreholes and water supplies used by each farmer;
 - Irrigation or impoundment licence granted by the EA; and
 - System of irrigation applied and the location of irrigation network for each field.

Agricultural Land Drainage

- 2.0 Particular care will be taken to ensure that the existing land drainage system is not compromised as a result of construction. Land drainage systems will be maintained during construction and reinstated on completion.
- 2.1 The ALO will coordinate drainage surveys to establish the existing drainage position including any related farm drainage that may be affected by the scheme. The services of a suitably qualified drainage consultant will be employed by the Applicant to act as a drainage expert during the detailed design process and liaise with landowners or occupiers (through the ALO) to consult on the pre and post drainage schemes required. This will include the design of any land drainage works required during construction, and on the design and timing of any land drainage works required for the subsequent restoration of the land. This process will take due regard of any local and site-specific knowledge.
- 2.2 Subject to the consultation existing agricultural land drains, where encountered during the construction of each phase, will be appropriately marked. The location of drains cut or disturbed by the construction works will be photographed, given a unique number and logged using GPRS coordinates. The actual condition and characteristics (e.g. depth of installation, pipe type and diameter) of the existing drainage will also be recorded upon excavation.
- 2.3 During the construction works, temporary drainage will be installed either side of the cable trenches, within the onshore cable corridor working width, to intercept existing field drains and ditches in order to maintain the integrity of the existing field-drainage system during construction and ensure existing flow is not channelled by the onshore cable corridor. Such measures will also assist in reducing the potential for wet areas to form during the works, thereby reducing the impact on soil structure and fertility. Drainage systems however will not be installed into areas where they are not currently present, e.g. environmental wetlands.
- 2.4 Any field drainage intercepted during the cable installation will either be reinstated following the installation of the cable or diverted to a secondary channel. Landowners and occupiers will be informed of the design of drainage works required during construction and following installation of the cables and associated works, including: pipe layout, falls, dimensions and outfalls (if required). The drainage would be reinstated in a condition that is at least as effective as the previous condition and will follow best practice for field drainage installations taking into account site specific conditions.
- 2.5 Where it is reasonable for the reinstatement of drainage to involve works outside of the order limits it will be done subject to the agreement of the landowner.

- 2.6 Landowners and occupiers will be provided with the opportunity to inspect land drainage works as they progress, subject to health and safety considerations. Furthermore, records of existing and remedial drainage will be maintained by the Applicant with copies provided to the Landowner (and the Occupier, if applicable) following the completion of construction works in each phase.
- 2.7 A dispute resolution process will be established including the appointment of a jointly agreed Independent Expert for drainage design and implementation, where required. Where agreement cannot be reached on the appointment of the expert the matter will be referred to the President of the Institution of Civil Engineers.

Appendix C: Soil Survey and Record of Condition

- 1.1** Pre-construction detailed soil survey work will be undertaken by a competent person (e.g. a soil scientist) in order to produce specific soil resource topsoil and subsoil unit plans and restoration specifications for areas of agricultural land within individual land holdings that will be occupied by Vanguard. These surveys will form the basis of the pre-construction condition assessments of the land prior to soil stripping operations and will be used to monitor the progress of soil handling and restoration operations.
- 1.2** The survey work will include the identification of the physical characteristics of profiles at a standard density of 100 m intervals (with additional profiles examined where the 100 m grid sampling does not enable a suitable density of sampling in an agricultural enclosure that will otherwise be missed.). Soil pits will also be examined at appropriate locations to provide additional detail on soil structure and stoniness. The survey will provide information on the following soil physical characteristics:
- Soil horizon depths for topsoil and subsoil horizons;
 - Soil textures of all horizons;
 - Soil colour;
 - Stone contents, estimated from augering, confirmed by soil pit excavation/and or sample analysis;
 - Presence and characteristics of mottling, a soil wetness indicator;
 - Presence of manganese concretions, a soil wetness indicator;
 - Identification of gleyed horizons;
 - Identification of slowly permeable layers; and
 - Identification of impenetrable rock layers.
- 1.3** **Record of Condition** will be undertaken and will include the following:
- Existing crop regimes
 - The position and condition of existing field boundaries
 - The condition of existing access arrangements
 - The location and type of existing private water supplies
 - The yield of crops
 - The quality of grazing land
 - The existing weed burden

Photographs and section drawings should be included in the record of condition and it should be provided to the landowner and occupier, for agreement, prior to entry to the landholding.

Appendix D: Soil Storage and Treatment

Reasoning

- When soil is stored in a bund it is hard to stop surface erosion and control weed growth
- Soil takes time to recover its structure and settle into a workable medium with reasonable drainage properties. The sooner it is restored to the working width the sooner the recovery process can start.
- Over the entire length of the route this would be a significant area of land being returned to good condition at earliest opportunity with option to crop, by agreement between the parties, and this avoid business disruption and reduce claims against the Applicant.
- Cover cropping the restored topsoil with specialist soil structuring cover crops will help draw moisture from the soil, improve structure, reinstate natural drainage channels and retain nutrients.
- Long term exposure of the subsoil to rain can cause damage and smearing of the upper layers and compaction in the lower layers. This element of the soil profile would normally be protected by topsoil and it is not in its nature to be directly exposed to rain.
- Impeded drainage on an exposed subsoil surface can result in ponding of rainwater leading to excessive periods of wetness making the soil more vulnerable to damage.
- Cables will be pulled in from the joint bays and if they fail they will be pulled out at the joint bays. The only reason for accessing the duct run between the joint bays should be if the cable fails and melts the ducts, or if the cable won't install properly due to a blockage in the duct. The following comments apply:
 - In the event of a heat event resulting in a damaged duct it is accepted that localised repair would be needed using the same working methodology of strip, store, replace, restore, albeit on a smaller scale and using the haul road for access.
 - If the ducts are installed properly there should be no issues with pulling the cables through.
 - If a duct needs to turn a tight bend and there is a risk of installation problems this area can remain open as there would be good technical and engineering reasons for doing so.
 - The topsoil would not be reinstated within an agreed distance of each side of joint bay giving room to work at the point.
- The provision for the topsoil to remain in a bund where there are good technical and engineering reasons allows the Applicant to avoid reinstating where they reasonably believe there could be need to access the ducts during cable installation and testing.

Provisions for Long Term Strip and Bund

- Dudgeon Offshore Wind and East Anglian One have shown that long term storage of topsoil can lead to loss of topsoil via surface runoff into the working area and surrounding land.
- Weed infestation of the bunds has also been a problem that requires use of non-selective herbicides to control and mechanical weeding.
- Stabilisation of the bund with a green cover is a good way to stabilise the soil surface and create a dominant green cover to suppress weeds.
- Establishing a green cover is difficult due to the recently disturbed nature of the soil, the profile of the bunds (high risk of seed wash off) and increased vulnerability to climatic conditions.

- Hydroseeding has been shown to effectively combat the problems noted above, particularly when used in conjunction with biodegradable hessian type erosion control blankets.
- Ensuring the green cover is topped regularly and not allowed to see can achieve stabilisation of the bund cover and avoids problems with weed inundation to valuable arable land.
- Vertically entrenched silt fences protect the bund from surface runoff onto the exposed subsoil working area, the surrounding farmland and surrounding watercourses.

Soil Specialist

- Provision of a soil specialist to act as a 3rd party referee between contractors and the landowner ensures work can proceed in a timely way whilst long term soil damage can be minimised.
- The landowner and contractors will at times have directly competing interests and each party is liable to take an entrenched point of view. The soil specialist can give an independent view so the landowner knows that if the soil is damaged he will have a valid and justified claim, and the contractor can avoid situations where they are interrupted because the landowner perceives the conditions to be unsuitable to work.

Preferred Working Methodology

NFU and LIG's preferred working methodology is as follows:

- Topsoil stripped and stored in a bund
- Subsoil trenched and stored in separate bund to topsoil
- Plastic ducts installed
- Subsoil replaced
- Topsoil replaced within 3 months of stripping where following conditions are met:
 - Subsoil is dry and in a suitable condition to take topsoil reinstatement
 - Landowner does not reasonably object to reinstatement
- Restored working width will be seeded with a cover crop of an agreed species mix for the soil type, land use and time of year.
- Applicant will not be obliged to restore the working area within an area at an agreed distance either side of a jointing bay, HDD launch area, or any other area where for good technical and engineering reasons it is not appropriate to do so. Such as where cables go around a bend, or archaeology, or cross existing/proposed infrastructure.

Following partial restoration of the working width Applicant will not:

- Be obliged to install the post scheme drainage works until such time as programmed on the wider scheme
- Be obliged to hand back possession of the working area if they do not reasonably consider it appropriate to do so.
- Be obliged to pay crop loss or any other loss arising from the farmer choosing to commercially crop the partially restored working area.

- The restoration of the topsoil will not be full restoration and the conditions associated with full restoration do not have to be met until the appropriate time as agreed.
- In the event that the topsoil will be stored in excess of 3 months NFU and LIG would like the following conditions to be included:
 - Topsoil and subsoil are kept separate
 - Entrenched vertical entrapment fences (Silt Fences) to be installed around the bund as per EA/SEPA Pollution Prevention Guidelines.
 - Hydroseeding of bunds with an agreed/appropriate grass mix at soonest opportunity recommended by specialist contractors.
 - Installation of biodegradable Geo-Jute Erosion Control Blanket to stabilise the surface and give a 'key' for the Hydroseeding growing medium.
 - Assessment to be carried out of where water may pond on subsoil in the stripped working area and, where appropriate, means to drain this water away installed through the bund if necessary.
 - Dewatering pits to be located on the haul road side of the working area.
- Applicant has confirmed that a soil specialist would be appointed as stated in paragraph 87 of the outline CoCP. NFU and LIG request that ALO works along side the soil expert. Furthermore NFU and LIG request the Drainage Consultant is also party to this monitoring during the works to have an input into the preparation, installation and reinstatement of the option area with a brief as follows:
 - To agree when conditions in the option area are suitable for operation of the works specifically required at the time of assessment.
 - To assess when work can recommence in the following situation:
 - There has been more than 12mm of rain falling on the corridor in any preceding 24 hour period.
 - There has been more than 20mm of rain falling on the corridor in any preceding 96 hour period.
 - Where the thresholds specified above have not been met but long term adverse weather conditions have lead to cumulative wetting of the option area.
 - Where the Grantor considers the conditions to be unsuitable for working without unavoidable long term soil damage.
- The advice of the soil specialist will be binding on both parties.

Appendix E: Vantage points re the Converter Station

See attached plan.

Key



Vantage point

Appendix E



Location of substation and converter station for Norfolk Vanguard