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# **Onshore Converter Station**

# Fencing and Enclosures Plan

# **DCO Requirement 17**

# (Applicable to Work Numbers 62 to 69)

Prepared by:	Checked by:	Approved by:
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	Revision Summary				
Rev	Date	Prepared by	Checked by	Approved by	
1	16/12/2020	Kay Griffin	Colin Bryans	David Boyd	
2	14/12/21	Kay Griffin	Phil Rew- Williamson	Gareth Mills	
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	Description of Revisions			
Rev	Page	Section	Description	
1	All	All	New Document	
2	All	All	Amended following comments from MSDC (13/01/21 and 13/05/21) and input of design information from Converter Station Principal Contractor	
3	All	All	Amended with respect to permanent fencing due to potential classification by BEIS and the Centre of Protection for National Infrastructure as Critical National Infrastructure	

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# 1. INTRODUCTION AND SCOPE

# 1.1. Project Overview

East Anglia Three Limited (EATL) was awarded a Development Consent Order (DCO) by the Secretary of State, Department of Business, Energy and Industrial Strategy (DBEIS) on 7 August 2017 for the East Anglia THREE Offshore Windfarm (EA THREE). The DCO granted consent for the development of a 1200MW offshore windfarm and associated infrastructure and is live until 28 August 2022.

- 2. The DCO has now been subject to three non-material variations:
  - In March 2019 EATL submitted a non-material change application to DBEIS to amend the consent to increase the maximum generating capacity from 1,200MW to 1,400MW and to limit the maximum number of gravity base foundations to 100. In June 2019 DBEIS authorised the proposed change application and issued an Amendments Order.
  - In July 2020 EATL submitted a second non-material change application to DBEIS to amend the parameters of its offshore substations (reducing the number of these to one) and wind turbines (a decrease in the number of turbines and an increase in their hub height and rotor radius). On 15 April 2021 DBEIS authorised this proposed change application and issued an Amendments Order.
  - In August 2021 EATL submitted a third non-material change application to DBEIS to amend the consent to remove the
    maximum generating capacity of 1,400MW and to amend the parameters of its wind turbines (a decrease in the number
    of turbines and an increase in their hub height and rotor radius). The application is currently in the consultation phase.
- The onshore construction works associated with EA THREE will have a capacity of 1400MW and transmission connection of 1320MW. The construction works will be spread across a 37km corridor between the Suffolk coast at Bawdsey and the converter station at Bramford, passing the northern side of Ipswich. As a result of the strategic approach taken, the cables will be pulled through pre-installed ducts laid during the onshore works for East Anglia ONE Offshore Windfarm (EA ONE), thereby substantially reducing the impacts of connecting to the National Grid (NG) at the same location. The infrastructure to be installed for EA THREE, therefore, comprises:
  - The landfall site with one associated transition bay location with two transition bays containing the connection between the
    offshore and onshore cables;
  - Two onshore electrical cables (single core);
  - Up to 62 jointing bay locations each with up to two jointing bays;
  - One onshore converter station, adjacent to the EA ONE Substation;
  - Three cables to link the converter station to the National Grid Bramford Substation;
  - Up to three onshore fibre optic cables; and
  - Landscaping and tree planting around the onshore converter station location.
- Since the granting of the DCO, the decision has been made that the electrical connection for EA THREE will comprise a high voltage direct current (HVDC) cable rather than a high voltage alternating current cable and, therefore, the type of substation that will be required is a HVDC converter station. The substation will, therefore, be referred to here as a 'converter station' and this amended terminology has been agreed with the relevant authorities on 15 October 2020. It has also been determined that only one converter station will be constructed rather than two and that the converter station will be installed in a single construction phase.

#### 1.2. Purpose and Scope

- 5. This plan has been produced to fulfil DCO Requirement 17 which states:
  - 17.—(1) No stage of the connection works may commence until for that stage written details of all proposed permanent and temporary fences, walls or other means of enclosure of the connection works have been submitted to and approved by the relevant planning authority.
  - (2) All construction consolidation sites must remain securely fenced in accordance with the approved details at all times during construction of the relevant stage of the connection works.
  - (3) Any temporary fencing must be removed on completion of the relevant stage of the connection works.
  - (4) Any approved permanent fencing in relation to an onshore substation must be completed before that onshore substation is brought into use and maintained for the operational lifetime of the onshore substation.

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6. The scope of this document relates to the fencing and enclosures associated with the onshore converter station works located near Bramford, Suffolk. These works comprise Work No.s 62 to 69 in the DCO and are located to the north of the existing NG substation and adjacent to the EA ONE Substation (Figure 1.1 Site Context Plan). Separate Fencing and Enclosures Plan have been produced for each stage of the onshore works and are provided under separate cover.

- 7. The information contained herein shall be adhered to by the Principal Contractor and their sub-contractors and implementation and compliance will be monitored by the Construction Management Team. These measures will only be revised with the agreement of Mid Suffolk District Council (MSDC).
- 8. Construction works at the Converter Station will be some of the first onshore connection works to commence. The access track and temporary laydown will be constructed in Summer 2022 with the remaining works being undertaken from Q2 2023.
- 9. All appointed fencing contractors will be provided with a copy of the Archaeological Written Scheme of Investigation (WSI) (EA3-OND-CNS-REP-IBR-000003). This WSI identifies areas where a programme of archaeological investigation (evaluation, mitigation, excavation, built heritage recording and watching brief) is required, and the measures to be taken to protect or preserve in situ or by record any significant archaeological remains that may be found. No installation of fencing or enclosures shall take place in any of the identified archaeological sensitive areas until the required mitigation works have been completed.

# 2. ABBREVIATIONS

ccs	Consolidated Construction Site	
CDM	Construction Design and Management Regulations 2015	
Chapter 8	Traffic Signs Manual Chapter 8 Traffic Safety Measures and Signs for Road Works and Temporary Situations (Guidelines for (Public) Highways signing, lighting and guarding)	
CLO	Community Liaison Officer	
DBEIS	Department of Business, Energy and Industrial Strategy	
DC	Direct Current	
DCO	Development Consent Order	
EA ONE	East Anglia ONE Offshore Windfarm	
EA THREE	East Anglia THREE Offshore Windfarm	
EATL	East Anglia THREE Limited	
ECoW	Ecological Clerk of Works	
EnvCoW	Environmental Clerk of Works	
ES	Environmental Statement	
HVDC	High Voltage Direct Current	
MSDC	Mid Suffolk District Council	
MW	Megawatt	
NG	National Grid	
WSI	Written Scheme of Investigation	

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### 3. FENCING AND ENCLOSURES PLAN GOVERNANCE

Prior to the commencement of construction, a senior member of the construction team will be appointed by the Principal Contractor to manage the implementation of the Fencing and Enclosures Plan. Contact details of the appointed staff member will be submitted to stakeholders for their records prior to commencement of construction.

# 4. FENCING AND ENCLOSURE CATEGORIES

#### 4.1. Overview

- This section explains the strategy behind the choice of fencing and enclosures required during construction for the different parts of the onshore converter station works. 'Construction working areas' refers here to any works associated with the construction of the onshore converter station, temporary laydown, access tracks and landscaping works.
- The extent and type of the fencing and enclosures to be installed for the project as a whole will be in accordance with the specification for fences set out in the Specification for Highway Works, Vol. 3 (BS1722 Part 2), or equivalent and are governed by five main parameters:
  - Adjacent Land Use stock or arable the infrastructure shall be generally of post and wire, post and rail or stock proof wire mesh fencing as depicted by adjacent land use.
  - Public Interface where the works interface with roads or a Public Right of Way then additional controls will be required to ensure the safety of any third parties and the workforce, such as appropriate gateways or signing, lighting and guarding in line with Safety at Road Works and Street Works Code of Practice and Chapter 8 Signing Lighting and Guarding (Chapter 8)(Department of Transport, 2009).
  - Security at locations where plant, machinery and materials are being stored then the level of fencing or enclosures will be increased to prevent unauthorised entry. Adequate security will be provided to protect the public and staff, prevent theft from or damage to the works, and prevent unauthorised entry to or exit from the site. Site gates will be closed and locked when there is no site activity and appropriate security measures shall be implemented.
  - Environmental Constraints/Protection where environmental receptors have been identified, appropriate fencing will be installed to ensure their protection. The type of fencing will be determined by the environmental receptor and associated requirements. Fencing will also be required to protect trees and hedgerows during construction and those planted post-construction to ensure establishment where required.
  - Third Party Requirements where stakeholders stipulate specific requirements.
- Fencing will be regularly inspected to ensure it is appropriately maintained.
- Further detail is provided on each of the fencing types proposed in Section 5 Temporary Fencing Details and Section 6 Permanent Fencing Details.

# 4.2. Onshore Converter Station- (Work No. 67)

- During the construction phase, the perimeter of the onshore converter station site (Work No. 67) will be secured by metal hoarding fencing and gateways/barriers to provide a high level of security and to prevent access by members of the public. A manual arm barrier system will be installed inside the perimeter gate to control access and egress to the compound. Following completion of the landscape bund to the north of the converter station compound, the fencing around this area will be removed other than that required to protect new planting.
- A permanent perimeter security fence shall be installed around the operational onshore converter station compound (Work No. 67) later in the construction phase, prior to the commissioning of the facility. The fencing will comply with "The Electricity safety, Quality and Continuity Regulations 2002" as a minimum standard and relevant British Standards (e.g. BS 1722 Fences). The function of the perimeter security fence is to provide a deterrent and physical barrier against intruders and must be robust enough to delay entry into the onshore converter station for persons who are unauthorised. The perimeter fence around the onshore converter station compound will be a palisade fence.

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#### 4.3. Temporary Laydown Area (Work No. 65)

During construction of the onshore converter station, there will be an adjacent temporary laydown area which will be set-up to accommodate temporary offices/welfare, machinery and materials storage, vehicle parking as well as being a delivery location. This will require a high level of security to protect the contents from third parties. It will have metal hoarding fencing and gateways/barriers (consistent with the Primary Construction Consolidation Sites for the cable corridor). A manual arm barrier system will be installed inside the perimeter gate to control access and egress to the compound.

On completion of the construction of the converter station, this area will be landscaped. Fencing to be used at this time is described in Section 4.5.

# 4.4. Cable Installation (Work No.s 62, 63, 64 and 66)

- Works No.s 63 and 66 will comprise the installation in open trenches of cables to connect the converter station to the nearby National Grid Bramford Substation. Construction activities for the installation of the cable in open trenches will be undertaken within a temporarily fenced strip of land, referred to as the working width. This fencing will comprise post and wire fencing to prevent unauthorized access as far as reasonably practicable, in accordance with the Construction Design and Management Regulations (CDM) 2015.
- The cable route into the converter station from Work No. 62 through Work No 63 was not known at the time of the preparation of the Environmental Statement and it was considered at that time that this may also be installed using open trenches. The ducts have now, however, been installed during the construction works for EA ONE to end within Work No. 67 (the converter station site). There will, therefore, be no requirement, as originally anticipated, to open trench these through Work no. 63 to the converter station.
- 21. Works within Work No. 62 will also include a section of access track/haul road to enable access to a jointing bay location in Work No. 58 (not part of this stage) and to enable the excavation of duct proving pits at both ends of the Horizontally Direct Drilled (HDD) ducts beneath the overhead lines. as shown on Figure 1 Site Context Plan.

# 4.5. Landscaping

The Landscape Master Plan sets out the landscaping proposals for the Converter Station and is included in the Landscape Management Scheme (EA3-OND-CNS-REP-IBR-000002). -Post and rail or post and wire fencing, with wire mesh netting, will be installed around areas of new planting prior to planting to provide protection.

#### 4.6. Public Rights of Way

- An existing PRoW crosses the construction haul road in Work No. 62. Safe passage will be maintained using crowd control fencing or post and rail fencing (depending on duration) and the demarcation of a safe route. A PRoW Management Plan is contained within the Code of Construction Practice (EA3-OND-CNS-REP-IBR-000005) and provides further details on signage and management of the PRoW.
- Access along the existing track (Street works S63 to 64) which crosses the onshore converter station area (Work No.s 62, 63 and 67), as shown on the Works Plans, will be prevented by the security fencing installed at the perimeter of the converter station site. This track, which is not a public Right of Way, was temporarily stopped during the EA ONE substation construction works and will be permanently severed by the construction of the onshore converter station facility.

# 4.7. Access Tracks

- New access tracks will be installed to link the existing permanent access to the EA ONE Substation to the temporary laydown area and onshore converter station site and also to link these two areas (see Figure 1.1). In addition, there will be an access track/haul road installed within Work No. 62 as part of the onshore cable works. These new access tracks/haul road will be fenced with post and wire fencing, or as required, in accordance with Construction Design and Management Regulations (CDM) 2015.
- Fencing in proximity to access tracks/haul road will also required to protect trees, hedgerows and ecology (see Sections 4.8 and 5.9) and also to separate a new pedestrian walkway from the adjacent construction traffic between the laydown area and converter station site. This will utilize post and rail or post and wire fencing.

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# 4.8. Retained Trees and Hedgerows

Trees that are to be retained and are within the vicinity of any works will be protected by Heras fencing in accordance with the British Standard 5837:2012. The fencing shall be installed at a specified distance from the tree defined by the Root Protection Area as calculated by the Arboricultural Clerk of Works. 'Crowd control fencing' will also be installed as a barrier to protect trees or hedgerows where needed.

Further details are provided in the Landscape Management Plan (EA3-CON-R-IBR-010129), presented under separate cover. This includes an Arboricultural Method Statement and Temporary Protective Fencing Specification.

### 4.9. Ecological Protection

- A range of fencing may be installed as part of the mitigation strategy for protected species. Full details of these mitigation requirements are presented in a project-wide Ecological Management Plan (EA3-GEN-ENV-REP-BOW-000029) presented under separate cover, however the types of fencing to be used are described within this plan in Section 5.
- Newt fencing may be required in identified locations should an alternative means of mitigation not be implemented, such as application of a District Level License associated with Great Crested Newts. In addition, temporary fencing may be required at selected locations in order to implement a capture and release programme to remove any protected species from the construction work area.
- Semi-permanent newt fencing may be required, again as part of a capture and release programme, however this fencing will remain in place throughout the duration of construction to prevent the protected species from entering the construction works. This fencing will be installed at the same time as the temporary fencing, pre-construction, but will remain until the completion of the works in that area.
- A number of badger setts have been identified within the Development Order Limits, due to their presence within or in close proximity the construction works some setts may need to be closed. In some cases, the closure of the sett will require the installation of badger gates to prevent them from entering. The location of the setts is such that they do not need closing prior to starting work on site and therefore, the gates will be installed as part of the construction works in July 2022 and will remain in place throughout construction.

# 5. TEMPORARY FENCING DETAILS

# 5.1. Overview

This section provides details on the different types of temporary fencing and enclosures to be used during the construction works. More technical details on their application are provided in the Appendix 1 Temporary Fencing Specifications and Appendix 2 Gateway Specifications.

### 5.2. Metal Hoarding

- Where the highest levels of site security and protection are required, metal hoarding will be deployed. Metal hoarding is intended for the enclosure of longer term installations such as the temporary laydown area and converter station working area, where security is a higher risk. These panels are heavier than Heras fencing and require effective staying.
- 35. Steel hoarding will be 2000mm in height and 2100mm wide. The panels will be galvanised steel with fixed legs, fixed together with metal couplers.
- Support posts and thermo plastic support feet will be installed to anchor the fencing. Where temporary work designs detail the need for extra support/anchoring, these will be installed in the form of extra support feet, concrete support feet or sand bags.

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Figure 5.1 Example Metal Hoarding



Figure 5.2 Example of Metal Hoarding Additional Support

Where security measures deem necessary, a 400mm Heras fencing extension panel will be fitted to the top of the steel hoarding fence panels.

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Figure 5.3 Example Extension Panels

#### 5.3. Post and Wire

- This is a level of fencing that offers good demarcation properties and is easy and quick to erect. This fence type can, however, be subject to damage risk from livestock and as such is only suitable for land which does not interface with livestock or is identified as lowest risk
- 39. Strain posts will be installed at each end of the fence and at all changes of direction or gradient. Rectangular mild steel galvanised wire mesh fencing will be strained between these and supported by intermediate posts installed at regular intervals.
- This type of fencing and associated access gates could also be used to ensure sufficient field enclosure whilst hedgerows establish and grow as part of the post construction landscaping (refer to EA3-GRD-CON-PLN-IBR-000103 Landscape Management Plan for more details). Further details and an illustration are provided in Appendix 1.



Figure 5.4 Example Post and Wire Fencing (with newt fencing behind)

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#### 5.4. Post and Rail

This fence type will be deployed around the construction working areas where post and wire is not deemed sufficiently robust. It involves vertical posts being knocked into the ground using a mechanical or manual fence knocker at regular spacing. Three horizontal rails are attached between each pair of posts.

This type of fencing and associated access gates could also be used to ensure sufficient field enclosure whilst hedgerows establish and grow as part of the post construction landscaping (refer to Landscape Management Plan (EA3-OND-CNS-REP-IBR-000002) for more details). Further details and an illustration are provided in Appendix 1.



Figure 5.5 Example Post and Rail Fencing

#### 5.5. Stock Proof

- Where a construction working area interfaces with farmland that contains larger livestock, stock proof fencing will be installed to ensure they are effectively contained through-out the period of the works. Provision shall also be made for deer populations to protect the new woodland planting blocks (refer to Landscape Management Plan (EA3-OND-CNS-REP-IBR-000002) for more details).
- The installation is as per the Post and Wire fencing, however, an increased specification will be required subject to the type of livestock e.g. installation of additional barbed wire protection. Further details and an illustration are provided in Appendix 1.

# 5.6. Heras Fencing

- 45. Heras fencing offers is easy to erect and dismantle and will be used to protect any trees as required. In addition, all open excavations will be cordoned off with Heras fencing panels.
- Heras fence panels will be anti-climb specification (2000mm high by 3000-35000mm wide). Panels will be held in situ with the use of thermo plastic support feet and fixed with the use of two couple clips per panel. Where extra support / anchoring is required extra support feet, concrete support feet or sand bags will be used.

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Figure 5.6 Example Heras Fencing

# 5.7. Signing, Lighting and Guarding

- Signing, lighting and guarding in accordance with Traffic Signs Manual Chapter 8 will be installed at all working construction areas, as required, to warn and protect the work-force from the dangers present.
- The following are compliant with the NRSWA ('New Roads and Street Works Act 1991) and the Safety at Street Works and Road Works A Code of Practice 2013:
  - Signing adequate warning and instruction signs to warn road users approaching from any direction of ongoing works, locations for this include highways improvements locations
  - Lighting warning lights will be deployed depending on the speed limit in force on a particular piece of highway (mandatory for 40mph and above) and traffic signals will be used for lane closures. Should night working be permitted at any time then this will comply with the External Lighting Emissions Plan (EA3-GRD-CON-PLN-IBR-000111)
  - Guarding the work-force will be protected, as necessary, by Chapter 8 barriers with lead-in cones; all open excavations will be cordoned off with Heras fencing panels.



Figure 5.7 Example Chapter 8 Barrier

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### 5.8. Gateways

49. Gates will match the fence installation type. Single gateways will comprise steel posts and be 3600mm wide by 1000mm high and double gateways will comprise steel gates and posts and be 6000m wide by 1000mm high. Further details and an illustration are provided in Appendix 2 and 3.





Figure 5.8 Example Heras / Steel Hoarding Gateways

At the temporary laydown compound and converter station site, a manual arm barrier system will be installed inside the perimeter gates to control access and egress to the compound. The barrier will be controlled by a security gate-person who will be housed in a temporary gatehouse.



Figure 5.9 Example Arm Barrier System

# 5.9. Tree and Hedgerow Protection

- Heras fencing will be installed in accordance with the British Standard 5837:2012 along the Root Protection Area of trees where there is a direct interface between the feature and the construction working area to protect against potential root disturbance. Protective fencing to BS 5837:2012 is braced to protect from failure from impacts. Reflective signage will be fitted to the barrier as required.
- Fencing will also be installed to protected hedgerows as required, the protective fencing is to be 'crowd control fencing', 1.1m high. Further details and illustrations are provided in Appendix 1

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Figure 5.10 Example Heras Fencing Tree Protection

The Landscape Management Plan (EA3-OND-CNS-REP-IBR-000002) provides further details on how tree and hedge protection is to be deployed.

# 5.10. Landscaping Protection Fencing

- Post installation protective fencing will also be installed where required around areas of new planting. Where required this may include standard stock proof timber post and rail fencing and/or timber post and wire fencing will be used to complete boundaries and protect new hedging and woodland.
- Additional deer control fencing and/or rabbit proof mesh fencing will also be installed around blocks of new woodland planting. The deer specification will protect against all species up to and including Red Deer. Gates in the deer control fencing will be padlocked to prevent unauthorized access and to minimise the potential for the gate to be left open. See Appendix 2 and also the Onshore Converter Station Landscape Management Plan (EA3-OND-CNS-REP-IBR-000002) for further details.







Figure 5.12 Example Rabbit-proof Fencing

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# 5.11. Ecology Fencing

Ecology fencing, specific to species, will be required to exclude identified protected species from entering the construction working areas and installation will be as advised by the Ecological Clerk of Works (EcoW). The specification of the fencing is dependent on species and purpose of the fencing, the following types of ecological fencing may be required, further details are provided in the Ecological Management Plan (EA3-GEN-ENV-REP-BOW-000029), provided under separate cover. The need for ecology fencing will be identified by the EcoW. Ecology fencing will be inspected by the EcoW, following installation and on a bi-weekly basis during spring and summer and a monthly basis during the autumn and winter.

#### 5.11.1. Temporary Reptile and Newt Fencing

- Newt fencing may be required in identified locations should an alternative means of mitigation not be implemented such as application of a District Level License. Newt fencing would also protect other mobile species to a certain extent. Temporary reptile and newt fencing would comprise wood stakes / posts planted every 1.5m to a height of 0.5m with an impermeable plastic membrane fixed to the posts. The layer needs to be partly buried to secure it against wind and burrowing. An indicative illustration is provided in Appendix 1.
- Installation will involve the excavation of a trench 200mm deep and 150mm wide, with 50x50x900mm timber stakes knocked in using a sledge hammer to a depth of 200-300mm at 1.5m intervals along the fence line. 1000 Gauge 250 micron Polythene or Woven Polyproylene will then be installed along the trench. This material will be rolled out and attached to the stakes by hand. A roll/fold will be placed in the top of the membrane before being attached to the stake. This roll will form an outward overhang which cannot be climbed by the reptiles/newts. The bottom of the polythene will then be installed into the trench, with a minimum 100mm underlap. A minimum of three clout nails will be used to attach the membrane to each stake. The trench will then be backfilled by hand or using a mini-excavator and the backfill compacted by foot.
- 59. Wherever possible, a silt fence plough will be used to install the membrane directly into the ground to avoid the need for open trenches and backfilling. The stakes will be installed as described above.
- 60. This fencing will be subject to regular inspection and maintenance to ensure it remains effective.



Figure 5.13 Example Temporary Reptile and Newt Fencing

#### 5.11.2. Semi-permanent Reptile and Newt Fencing

- Where the newt fencing is to remain in place during construction, a more robust type of fencing will be installed in the form of for example, Herpetosure, which comprises of 3000 x 900 x 3.5mm beige recycled polypropylene panels. Herpetosure panels have a built in lip (roll) which placed outward facing to prevent newts climbing into an area. The fencing will be designed to be reusable and recyclable and offers a high level of impact resistance.
- A tractor with sub-soiler / trencher or pedestrian trencher will be used pull a slit / trench into the ground to a depth of 200-300mm; where this is not possible a mini excavator will be used to create the trench or the trench will be dug by hand. Herpetosure panels will then be placed into the trench, over lapped and riveted together with three rivets.

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# 5.11.3. Badger Gates

During the closure of badger setts, badger gates will be installed to prevent the badgers from re-entering the sett as shown in Figure 5.14 and Figure 5.15..

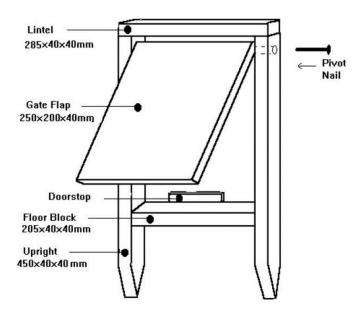


Figure 5.14 Typical Badger Gate



Figure 5.15 Example Badger Fencing and Gate

# 6. PERMANENT FENCING DETAILS

# 6.1. Onshore Converter Station Fencing

The only permanent fencing to be installed is the perimeter security fencing around the onshore converter station. The fencing will comply with "The Electricity safety, Quality and Continuity Regulations 2002" as a minimum standard and relevant British Standards

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(e.g. BS 1722 Part 10). In addition, the security requirements at the converter station are anticipated to be strictly controlled by its potential classification by BEIS and the Centre of Protection for National Infrastructure as a Critical National Infrastructure site due to the electrical capacity of the wind farm being greater than 1000 MW. The exact specification of the type of fencing, lighting, CCTV etc., will be negotiated by National Grid as the network operator but is anticipated to comprise a minimum 3m high palisade fence, in standard 2750mm panels (see Appendix 3). This will be installed on posts (127mm x76mm) suitably embedded in concrete foundations. The fence will have a concrete 300mm deep mass concrete anti-burrow strip around the full perimeter with suitable ducts and access for incoming services. Further details are provided in Appendix 3. These details will be confirmed with MSDC, following confirmation by the regulatory authorities.

#### 6.2. Maintenance

All fencing will be regularly inspected by the Site Management team. Where defects or damage is found, repairs will be undertaken within 24 hours. Where there is a requirement for temporary fencing Chapter 8 Signing, Lighting and Guarding will be used to prevent unauthorised access.

# 6.3. Replacement Fencing

Landowners fencing that has to be removed as part of the construction works will be replaced on a like-for-like basis. Although existing fencing will be retained / repaired as much as possible, some circumstances will necessitate partial or complete removal.

# 7. SUMMARY OF FENCING AND ENCLOSURE REQUIREMENTS

The following table shows a summary of proposed fencing and enclosures to be installed during the onshore construction works. Illustrative drawings are presented in Appendices 1 to 3.

Table 7-1 Summary of Fencing and Enclosure Requirements

Category	Fencing and Gateway Types
Onshore Converter Station – permanent during operational phase	Palisade Fencing and Gateways
Onshore Converter Station – temporary during construction phase	Metal Hoarding with double gateways;  Manual arm barrier;  Chapter 8 Signing, Lighting and Guarding
Temporary Laydown Area	Metal Hoarding with double gateways;  Manual arm barrier;  Chapter 8 Signing, Lighting and Guarding.
Cable Installation	Post and rail or post and wire Chapter 8 Signing, Lighting and Guarding
Landscaping	Stock proof timber post and rail fencing and/or timber post and wire fencing  Deer control fencing and rabbit proof mesh fencing
Public Rights of Way	Crowd control fencing Post and rail (if required for a longer duration)
Access tracks and haul road	Post and wire fencing (where required by CDM Regulations)  Post and rail or post and wire fencing or as required by the CDM Regulations, will also be used for a new pedestrian walkway between the laydown area and converter station site

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Category	Fencing and Gateway Types
Trees and Hedgerows Protection	Heras fencing Crowd control fencing
Ecological Protection	Temporary newt/reptile fencing (if required) Semi-permanent newt fencing (if required) Badger gates

# 8. **DECOMMISSIONING**

- On completion of the onshore construction works, all fencing will be removed with the exception of the onshore converter station perimeter fencing and any landscaping protection fencing. All boundaries will be reinstated to match existing/previous boundary treatments. All reinstatement will be in agreement with affected landowners. Temporary fencing will be removed as soon as practicable.
- 69. General disposal parameters for the fences/enclosures once removed comprise:
  - Re-use by local landowners;
  - Re-use/Recycle via local recycling centres;
  - Off Hire / Return to applicable depots to be re-used in future; or
  - Disposal remove to applicable disposal site in line with current legislative requirements.

# 9. REFERENCES

Department for Transport, 2009, *Traffic Signs Manual, Chapter 8 Traffic Safety Measures and Signs for Road Works and Temporary Situations, Part 1: Design, London, TSO (https://www.gov.uk/government/publications/traffic-signs-manual)* 

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# **APPENDIX 1 TEMPORARY FENCING SPECIFICATIONS**

#### **Post and Wire**

Strain posts will be knocked into the ground with the use of a mechanical or manual fence knocker to a depth of 750mm. Where circumstances do not allow posts to be knocked into the ground, then post holes shall be excavated to a depth of 800mm x 300mm x 300mm. The excavations will be backfilled with the use of compacted as dug material.

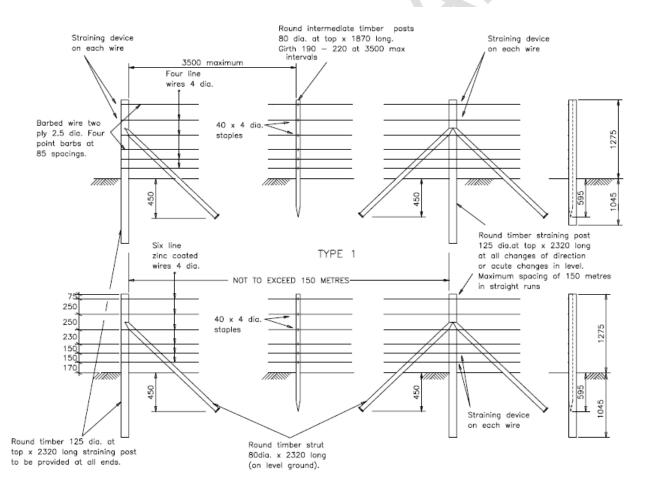
Support posts will be knocked into the ground a depth of 450mm. Where it is impracticable to knock the posts in, an excavation to a depth of 500mm will be undertaken and filled with compacted as dug material.

Intermediate posts will be knocked into the ground a depth of 325mm. Where it is impracticable to knock the posts in an excavation to a depth of 450mm will be undertaken the installation will be filled with compacted as dug material.

#### **Dimensions:**

- Terminal/Strain Posts round, 125mm x 2320mm long
- Intermediate Post round, 80mm x 1870mm long, installed at maximum 3500mm intervals
- Strain Supports installed where there is a change of direction or 150m maximum spacing
- Rectangular Mild Steel Galvanised Hinge Joint Wire Mesh Fencing.

Figure A Post and Wire Fencing



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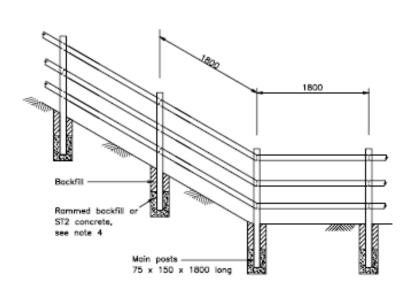
#### **Post and Rail**

Posts will be knocked into the ground with the use of a mechanical or manual fence knocker to a depth of 600mm. Where circumstances do not allow posts to be knocked into the ground, then post holes shall be excavated to a depth of 600mm x 300mm x 300mm. The excavations will be backfilled with the use of compacted as dug material.

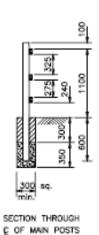
#### Dimensions:

- Posts 75mm x 150mm x 1800mm long
- Rails 38mm x 87mm
- Post spacing 1800mm centre spacing

Figure B Post and Rail Fencing







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#### **Stock Proof**

Strain posts will be knocked into the ground with the use of a mechanical or manual fence knocker to a depth of 750mm. Where circumstances do not allow posts to be knocked into the ground, then post holes shall be excavated to a depth of 800mm x 300mm. The excavations will be backfilled with the use of compacted as dug material.

Support posts will be knocked into the ground to a depth of 450mm. Where it is impracticable to knock the posts in, an excavation to a depth of 500mm will be undertaken with 225mm of concrete placed in the bottom of the installation and the remainder will be filled with compacted as dug material.

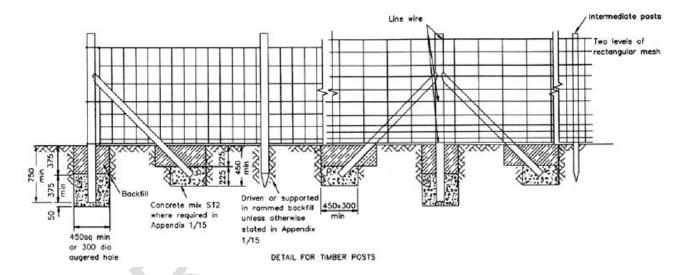
Intermediate posts will be knocked into the ground to a depth of 325mm. Where it is impracticable to knock the posts in, an excavation to a depth of 450mm will be undertaken. The installation will be filled with compacted as dug material.

#### **Dimensions:**

- Terminal/Strain Posts round, 125mm x 2320mm long
- Intermediate Posts round, 80mm x 1870mm long, installed at maximum 3500mm intervals
- Strain Supports installed where there is a change of direction or 150m maximum spacing
- Rectangular Mild Steel Galvanised Hinge Joint Wire Mesh Fencing

2 x Strands of 2 Ply HT Barbed Wire – evenly tensioned shall be installed along the top of the fencing. Where there is interface with the general public plain wire shall be used in lieu of barbed wire.

Figure C Stock Proof Fencing



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# Temporary and Semi-permanent Newt / Reptile Fencing

Using a tractor mounted chain trencher or boxer pedestrian trencher a trench 200mm deep and 150mm wide will be made to fit the membrane into following trench excavations. 50mmx50mmx900mm timber stakes will be installed along the edge of the trench. Stakes will be knocked in to a depth of 300mm at 1.5m centres along the fence line. Stakes will be transported to the works area using a tele-hander or vehicle and trailer.

1000 Gauge 250 micron Polythene or Woven Polyproylene will be used to form the temporary fencing. This material is supplied on a 1m x 100m roll and will be rolled out and attached to the stakes by hand. A roll/fold will be placed in the top of the membrane before being attached with a clout and steel washer to the stake. This roll will form an overhang which cannot be climbed by the reptiles. The bottom of the polythene will then be installed into the trench, including a minimum of 100mm under-lap. A minimum of three clout nails will be used to attach the membrane to each stake.

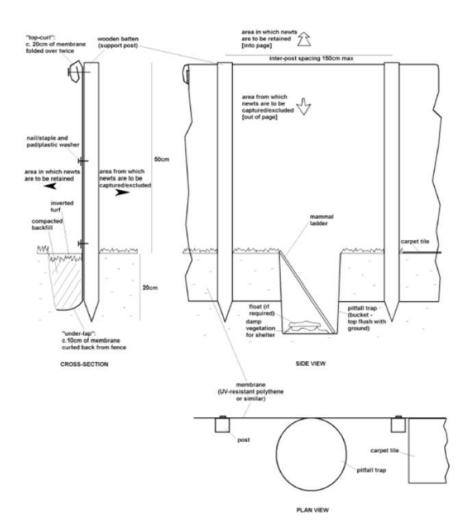
For the semi-permanent fencing, Herpetosure, which comprises of 3000 x 900 x 3.5mm beige recycled polypropylene panels, or similar specification of semi-permanent fencing is to be used. The fencing to be used will be designed to be reusable and recyclable and offer a high level of impact resistance. A tractor with sub-soiler / trencher or pedestrian trencher will be used pull a slit / trench into the ground to a depth of 300mm; where this is not possible a mini excavator will be used to create the trench or the trench will be dug by hand. Herpetosure panels will then be placed into the trench, over lapped and riveted together with three rivets.

The trench will then be backfilled by hand or using a mini-excavator and the backfill compacted by foot.

Where ever possible, a silt fence plough will be used to install the membrane directly into the ground to avoid the need for open trenches and backfilling. No trenches will be left open overnight.

All fence lines will be regularly checked for gaps or defects.

Figure D Newt/Reptile Fencing



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# **Crowd Control Fencing**

Figure E Crowd Control Fencing



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# **APPENDIX 2 GATEWAY SPECIFICATIONS**

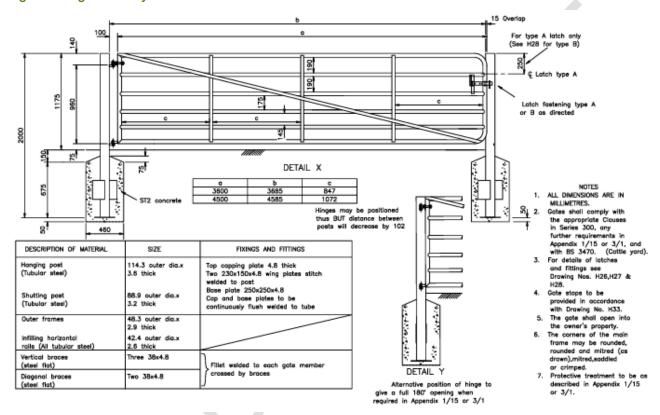
# **Single Gateway**

Typical arrangements for single gateways will be steel gates with steel posts, unless otherwise requested by landowners. The gateway shall be 3600mm wide by 1000mm high.

Posts will be installed 825mm below the surface level and will be set in concrete.

All gates will be fitted with warning and information signs.

Figure F Single Gateway



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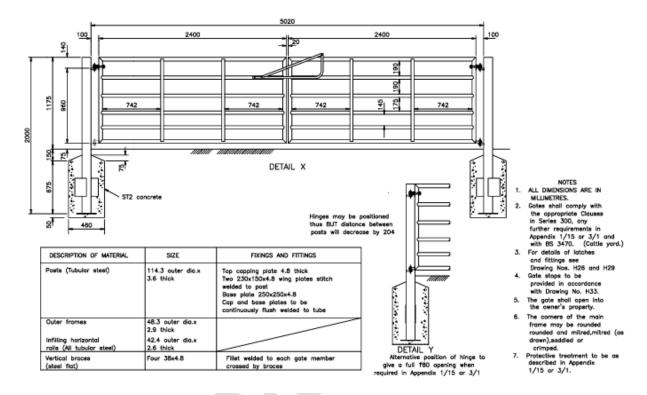
# **Double Gateway**

Typical arrangements for double gateways will be steel gates with steel posts, unless otherwise requested by landowners. The gateway shall be 6000mm wide by 1000mm high.

Posts will be installed 825mm below the surface level and will be set in concrete.

All gates will be fitted with warning and information signs.

# Figure G Double Gateway

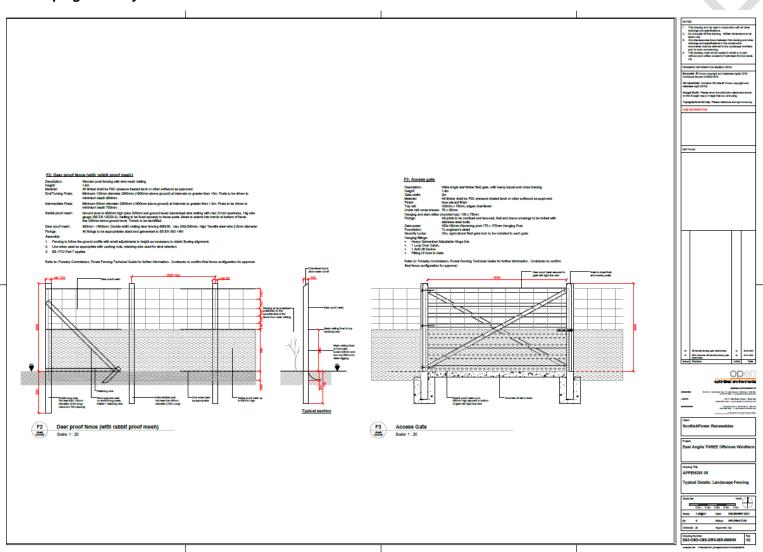


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# **Landscaping Gateway**



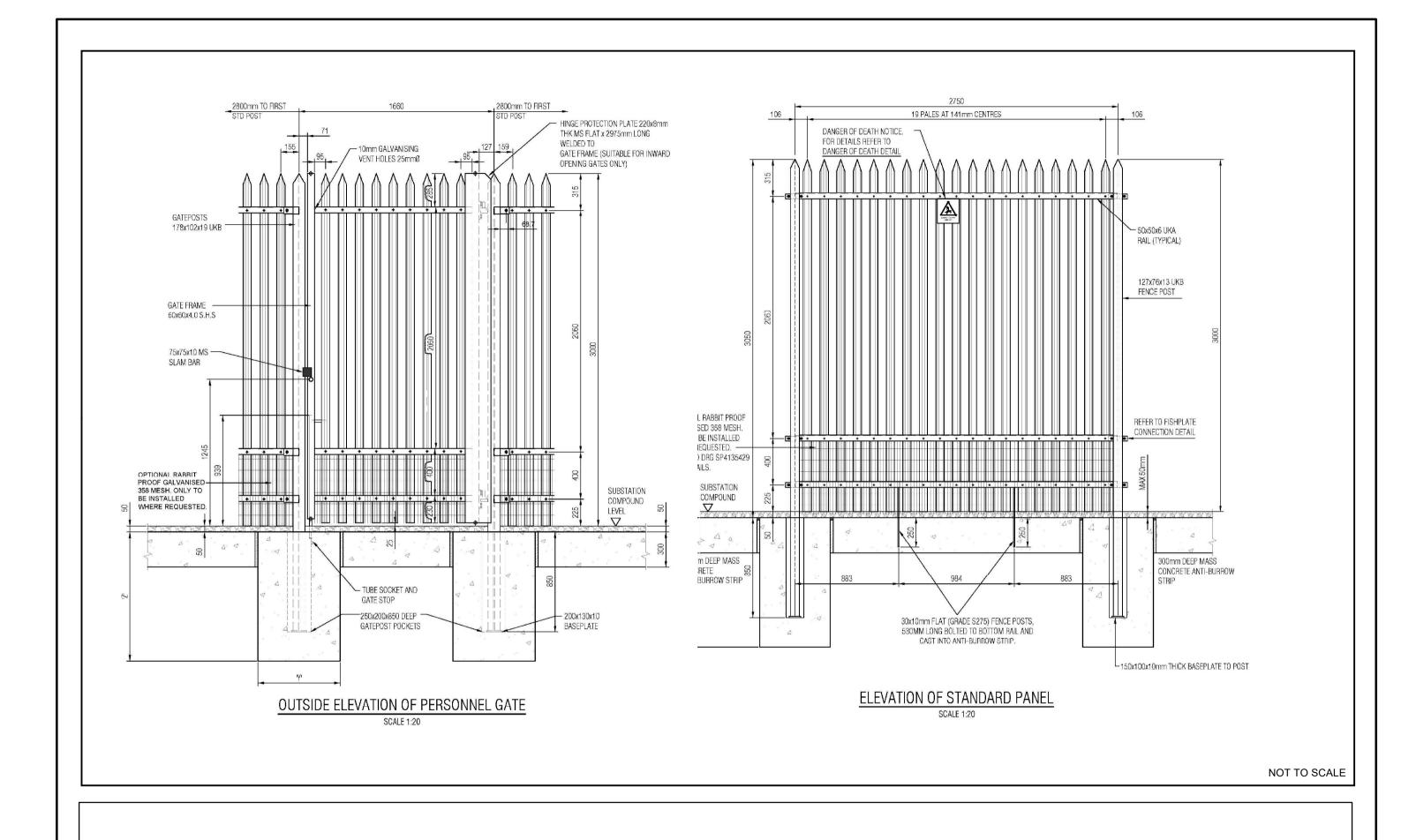
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# **APPENDIX 3 PERMANENT CONVERTER STATION FENCING SPECIFICATION**





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NOTTO BE USED FOR NAVIGATION.

Pedestrian Gate and Standard Panel Detail

 Drg No
 05356.00006.12.0032.0 Fence and Gate Details

 Rev
 1

 Date
 07/04/2022

 Layout
 N/A

