

**ENGINEERING**

**THE NATIONAL GRID ELECTRICITY TRANSMISSION (LITTLE HORSTED SUBSTATION  
CONNECTION) COMPULSORY PURCHASE ORDER 2022**

**SUMMARY STATEMENT OF EVIDENCE**

**David Cole  
Director  
DAC Power Limited**

1. **QUALIFICATIONS AND EXPERIENCE**

1.1 I am David Cole, Director of DAC Power Limited, a consultancy which specialises in providing engineering services to the electricity transmission/distribution industry. I have worked in the High Voltage Electricity industry since 2003.

1.2 I have been working on the Little Horsted Substation Connection Project (“the Project”) since September 2020. My role involves supporting with the development of the Project.

2. **INTRODUCTION AND SCOPE**

This section sets out the scope and structure of my evidence.

3. **OVERVIEW OF THE PROJECT**

3.1 The Order (**CD D1**) has been made to acquire the land and new rights required for the construction, operation, and maintenance of the Project, the main components of which are:

3.1.1 The construction of a new 400kV NGET GSP substation;

3.1.2 The construction of a new 132kV SEPN substation;

3.1.3 Modifications to the existing 400kV Bolney to Ninfield 4VM OHL (comprising the replacement of an existing pylon with two new pylons and realignment of the OHL);

3.1.4 A new vehicular access to the NGET and SEPN substations;

3.1.5 Ecological mitigation and drainage works.

4. **PHYSICAL COMPONENTS AND WORKS REQUIRED**

4.1 NGET developed a design for the Project for the purposes of seeking planning permission and promoting the Order (**CD D1**). This was informed by a wide range of surveys and assessments, including ecological surveys, geophysical surveys, ground investigations (e.g. boreholes), soil surveys, and land drainage assessments.

**400kV NGET GSP Substation (shown coloured light pink on the Order maps (CD D2) and coloured bright pink/magenta on the Substation Indicative Layout Plan at Appendix 1) and**

**132kV SEPN Substation (shown coloured light pink on the Order maps (CD D2) and coloured orange on the Substation Indicative Layout Plan at Appendix 1)**

***Physical components***

4.2 The NGET GSP substation and SEPN substation layouts are illustrated on the drawing at **Appendix 1** (“Substation Indicative Layout Plan”). The key component parts are labelled on it, and shown (by way of illustration) on the figures at **Appendices 2-11**.

***Land required (Order Plot 35 shown light pink on the Order Maps (CD D2))***

4.3 Freehold acquisition of the land required for the substations is justified for the following reasons:

4.3.1 A new substation constitutes significant above ground permanent infrastructure which effectively sterilises the land i.e. it cannot be used for any concurrent purpose.

- 4.3.2 The substations are vital to ensure the continuous flow of electricity from the National Grid to the Lewes area, and any unauthorised interference with them could adversely affect security of supply to the Lewes area.
- 4.3.3 The substations will contain high voltage equipment that could cause significant or potentially fatal injury.

**Replacement OHLs (land shown coloured green on the Order Maps (CD D2) and working areas coloured orange on the Order Maps)**

***Physical components***

- 4.4 It is necessary to realign a section of the existing Bolney- Ninfield OHL so that it can connect to the two new pylons to be installed within the NGET GSP substation. This will involve the removal of existing sections and the installation new sections.

***Works required/construction methodology***

***Current Pylon Arrangement***



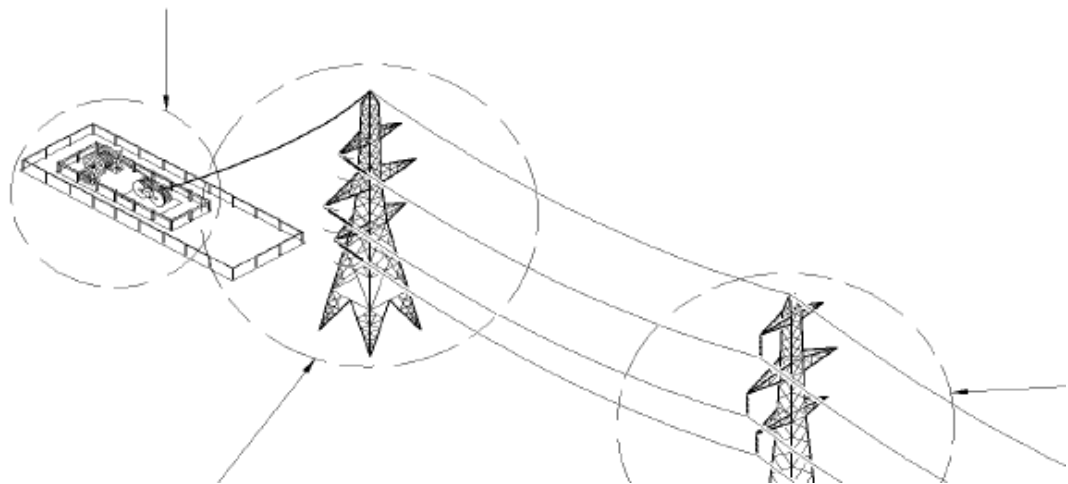
***Final Pylon Arrangement***



- 4.5 In summary, the existing OHL will first be lowered, the new pylons will then be erected, and the new OHL will be pulled up from the new pylons through to pylon 71 and pylon 64 respectively using a winch.
- 4.6 To remove the existing sections of OHL, pulling positions (working areas) will need to be established at those pylons.
- 4.7 Equi potential zones ("EPZ") (i.e. safe working areas- see photo below) will be set up to control the risks of having one circuit live during operations. The EPZ must be located at a distance 1.5 times the pylon height from the base of the pylon (75m), to ensure that the structure is not put under too much vertical load.



Layout of an Equipotential Zone (Ensure Positioned to Maximise Clearance to Adjacent Live Circuit)



- 4.8 Once the EPZ zones have been established and the OHL circuit is under outage, the existing OHL will be pulled out with ropes and lowered onto the vegetation, minimising any damage to vegetation and habitat. Scaffolds will be erected to protect features such as roads and vegetation.
- 4.9 The existing pylon to the north of the NGET GSP substation will be removed using a crane and an excavator.

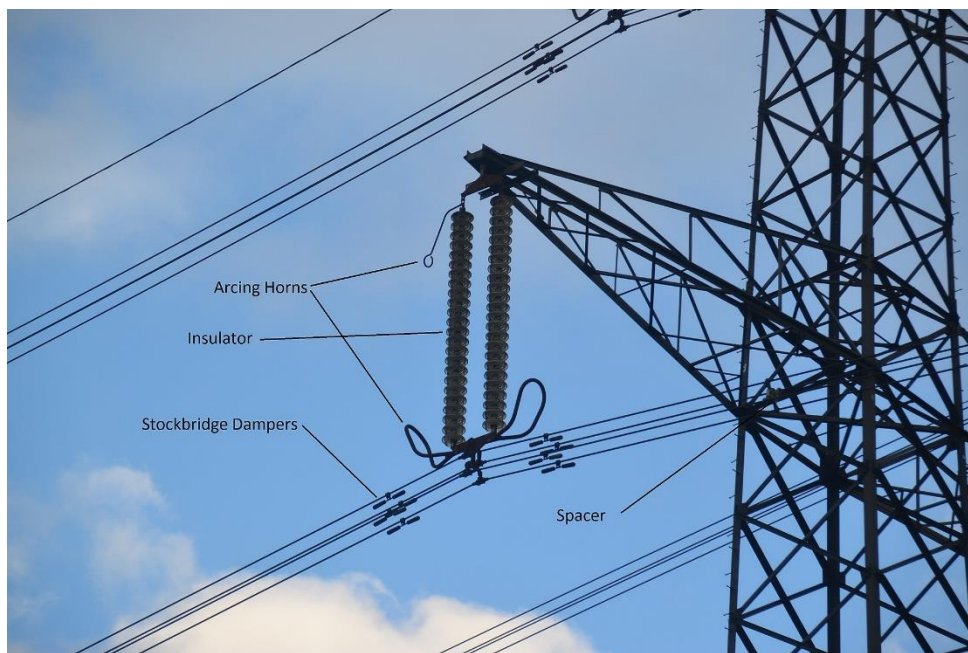
***Rights needed***

- 4.10 The new sections of OHL will oversail the land shown coloured green on the Order Maps (**CD D2**). Permanent rights, referred to as 'Overhead Line Rights' are needed over this land to enable the OHL to be installed, and then to be retained, used, maintained and protected from interference thereafter. The plots allow enough width for the natural 'swing and sway' of the OHL, and to enable NGET to establish a 'protective zone' within which certain activities are prevented in order to protect the OHL from interference.
- 4.11 The areas of land shown coloured orange on the Order Maps (**CD D2**) are the working areas. The working area to the north of the NGET GSP substation is needed for removal of the redundant pylon. The other working areas are required to enable EPZ's to be created. A bespoke package of 'Working Area Rights' will be acquired over this land.

**Arcing horn replacement (land shown coloured light blue and light green on the Order Maps (CD D2))**

***Physical components***

- 4.12 The electrical arcing gap (i.e. the gap across which electricity is required to jump) on the pylons within a mile either side of the new NGET GSP substation will need to be changed to maintain security of supply. The arcing horns on those pylons (example below) therefore need to be replaced.



***Works required/construction methodology***

- 4.13 Replacing the arcing horns will involve a small working party disconnecting the existing equipment, lowering it to the ground and lifting the new equipment (with ropes and winches).

***Rights needed***

- 4.14 A package of 'Arcing Horn Rights' will be acquired over the land shown coloured light blue on the Order Maps (**CD D2**).
- 4.15 To ensure that access can lawfully be taken from the nearest public highway to the working areas, 'Arcing Horn Access Rights' will be acquired over the land shown coloured light green on the Order Maps (**CD D2**).

**Colour plate replacement (land shown coloured grey dark pink/magenta on the Order Maps (CD D2))**

***Physical components***

- 4.16 For safety reasons, the circuit identification ('colour') plates on all pylons from Little Horsted to Ninfield Substation will need to be changed.

***Works required/construction methodology***

- 4.17 Replacement of the colour plates will require a small work party to access and climb each pylon to replace the plate. To carry this out safely a work zone needs to be established around the pylon.

***Rights needed***

- 4.18 A package of 'Colour Plate Rights' will be acquired over the land shown coloured grey on the Order Maps (CD D2).
- 4.19 To ensure that access can lawfully be taken from the nearest public highway to the working areas, 'Colour Plate Access Rights' will be acquired over the land shown coloured dark pink/magenta on the Order Maps (CD D2).

**Temporary Construction Compound ("TCC") (shown coloured red on the Order maps (CD D2))**

***Physical components***

- 4.20 The compound will comprise of hardstanding and a perimeter fence and will be used for the storage of plant, machinery, materials, and the provision of site management and welfare facilities.

***Works required/construction methodology***

- 4.21 Works will be required to create and remove the compound and reinstate the land.

***Rights needed***

- 4.22 A package of 'Construction Compound Rights' needs to be acquired over the land shown coloured red on the Order Maps (CD D2).

**Drainage corridor (shown coloured brown on the Order maps (CD D2))**

***Physical components***

- 4.23 Water run-off from the SGT bunds will need to be discharged. A drainage system therefore needs to be installed which will consist of a plastic pipe. Where the drainage meets the outfall point a head wall needs to be installed.

***Works required/construction methodology***

- 4.24 The drainage will be installed using an excavator.



***Rights required***

- 4.25 A package of 'Drainage Rights' is required over the land shown coloured brown on the Order Maps (**CD D2**) to enable the drainage system to be installed, retained, used and maintained.

**Ecological Mitigation (Plots 58a and 58b shown coloured light pink on the Order Maps (CD D2) and the land shown coloured purple, turquoise and cross-hatched green on the Order Maps)**

***Physical components***

- 4.26 The evidence of Ms Amy Copping explains the need to provide replacement ecological habitat on Plots 58a and 58b. There are other areas where works are required to mitigate impacts on protected species.

***Works required/construction methodology***

- 4.27 Minor works are required to install mitigation measures such as ecology fences/gates and dormouse boxes.

***Rights required***

- 4.28 Rights are required over the land shown coloured purple, turquoise and cross-hatched green on the Order Maps (**CD D2**) to install mitigation measures, and to keep them in situ and monitor them.

**Substation Visibility Splay (land shown yellow on the Order Maps (CD D2))**

***Physical components/Works required/construction methodology***

- 4.29 In order to achieve safe vehicular access to the substations visibility splays must be maintained which allow sufficient sightlines along the public highway.

***Rights required***

4.30 Rights, known as 'Substation visibility Splay Rights' over the land shown coloured yellow on the Order Maps (**CD D2**),

5. **OBJECTIONS MADE TO THE ORDER**

5.1 Please see the schedule at Appendix B of the statement of evidence of Mr Ingram.

6. **SUMMARY AND CONCLUSIONS**

6.1 I conclude that for the reasons explained in my statement, all of the land and rights included in the Order are necessary for the construction, operation, maintenance and protection of the Project.

7. **DECLARATION**

I confirm that the opinions expressed in this proof of evidence are my true and professional opinions.



David Cole

17 November 2022