AA/DR/1

OVERHEAD LINE AND HEADHOUSES /SEALING END COMPOUNDS EVIDENCE

THE NATIONAL GRID ELECTRICITY TRANSMISSION PLC (GRAIN TO TILBURY) COMPULSORY PURCHASE ORDER 2024

STATEMENT OF EVIDENCE

David Rogerson

BENG

National Grid Electricity Transmission plc

Contents

1. QUALIFICATIONS AND EXPERIENCE

1.1 My name is David Rogerson and I am a Lead Transmission Engineer with National Grid Electricity Transmission Plc **("NGET"),** specialising in Over Head Lines **("OHL")** and High Voltage **("HV")** Cable Technology.

1.2 My evidence relates to the engineering elements of the Grain To Tilbury Project ("**the Project**").

1.3 I have a Degree in Electrical Engineering combined with Power Engineering and Communications.

1.4 I have eighteen years' design experience with twelve years in my role with NGET where I am authorised by National Grid's Business Procedure 141 (an industry recognised assessment and authorisation) for both OHL and cable design assurance. This authorisation is part of NGETs obligations to ensure the correct operation and safety of equipment on and near the electricity network.

1.5 In my role I am responsible for ensuring that:

1.5.1 NGET discharge its legal obligations concerning health, safety and environmental requirements;

1.5.2 Design is undertaken in accordance with NGET technical policy specifications and applicable supporting documents;

1.5.3 A holistic design is integrated through all technical disciplines and is effectively specified, managed and optimised;

1.5.4 Those undertaking the design from the principal contractor organisation have the minimum skill sets in accordance with the NGET's standards;

1.5.5 The design of projects is undertaken with a demonstrable level of technical governance; and

1.5.6 The design of projects appropriately balances technical compliance, cost and operational risk.

1.6 I am currently working on approximately 120 transmission asset projects across the NGET portfolio, across both OHL and HV cable projects.

1.7 I have been working on the Project since 2020 as an OHL design assurance engineer.

2. INTRODUCTION AND SCOPE OF EVIDENCE

2.1 References in my evidence to the core documents are made by the abbreviation, for example, **"CD XX".** The evidence of other witnesses is referred to by the name of the author. There is a glossary of key terms used by all the NGET witnesses at **CD:F7**

("the Glossary") and my evidence adopts the terms defined in the glossary.

2.2 My evidence is structured as follows:-

2.2.1 Section 3 provides an overview of the Grain to Tilbury Project;

2.2.2 Section 4 describes the works required for the Project and the necessary land rights for the OHLs and SECs;

2.2.3 Section 5 provides a response to matters raised by objectors to the Order insofar as they are relevant to my evidence;

2.2.4 Section 6 provides a summary of my evidence and my conclusions; and

3. OVERVIEW OF THE PROJECT

3.1 The Project comprises the boring of a new tunnel under the River Thames approximately 2.2km long to allow for the uprating of the circuit with 12 cables installed in total.

3.2 It comprises the following above ground infrastructure at both ends of the tunnel:

3.2.1 a new sealing end compound ("**SEC**");

3.2.2 new tunnel head house (covering the shaft into the tunnel);

3.2.3 new overhead line gantry structures which will connect the overhead line ("**OHL**") downlead conductors and transfer them to the cable at both ends of the tunnel; and

3.2.4 modifications to the existing OHL to enable the new OHL conductors which will be connected to the existing 400 kilovolt ("**kV**") OHL conductors via new terminal towers. The old OHL conductors and existing towers will be removed as part of the scheme.

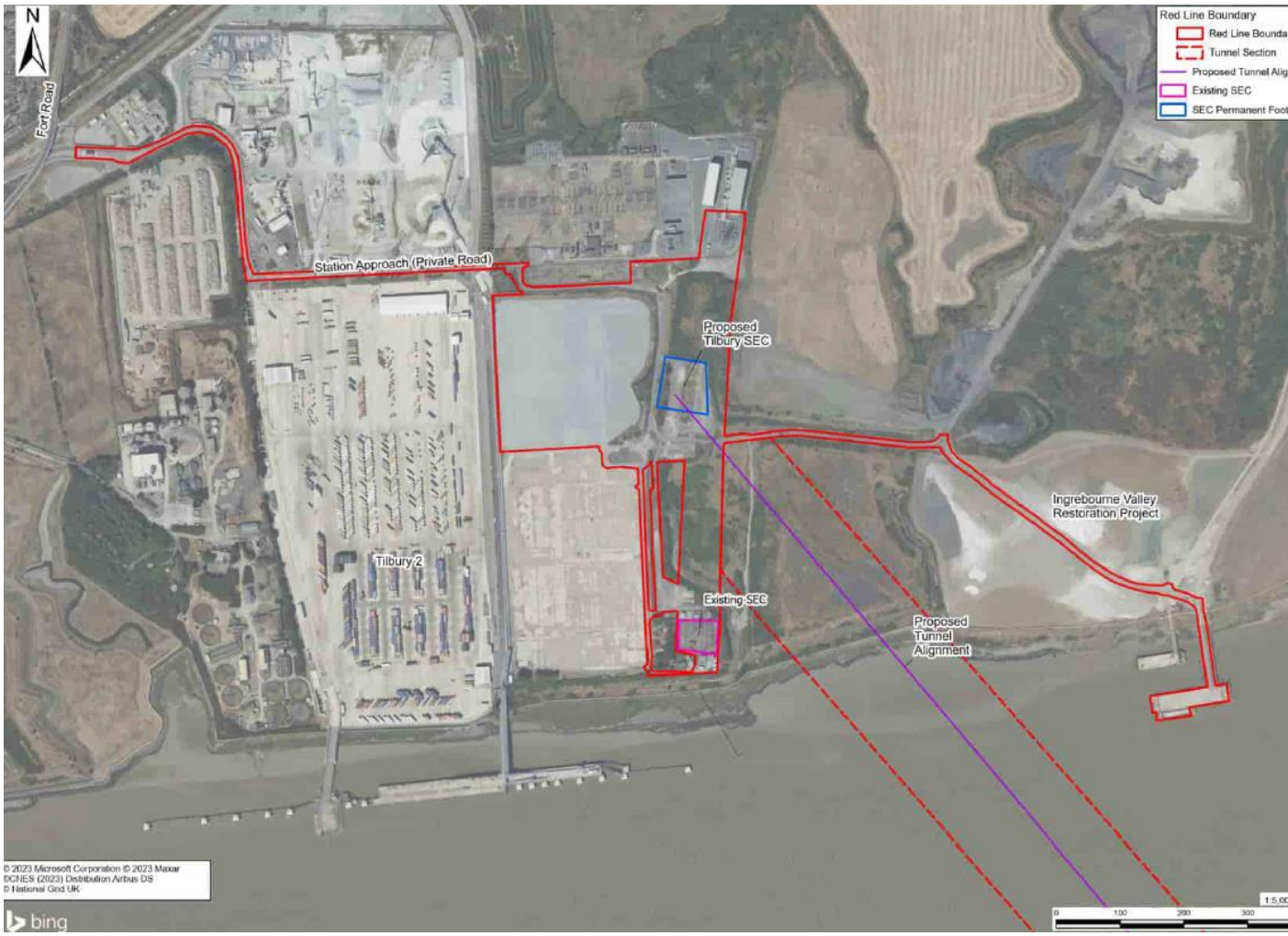
3.3 The Project will in turn connect into two existing 400KV overhead lines known as Kingsnorth to Tilbury and Grain to Tilbury which are proposed to be refurbished as part of a separate package of works once the Project has completed.

4. WORKS REQUIRED

Tilbury SEC

4.1 The new Tilbury SEC is proposed to be developed on an area of existing hardstanding in Tilbury, Thurrock, on land owned by the Port of Tilbury London Limited, and which was formerly Tilbury Power Station. A plan showing the location of the Tilbury SEC is at **Fig. 1** below.

Fig. 1



4.2 The Tilbury SEC will occupy an area of approximately 7,339m2 / 0.73ha. During construction, a larger area of approximately 81,430m2 / 8.14ha will be required to accommodate construction equipment and storage areas.

4.3 The SEC will contain new XLPE cables, new cable terminations (polymeric), 12 x new cable support steel structures with buried concrete foundations, concrete surface troughs for new cables, water tank for firefighting purposes, 6 x surge arresters for protection of underground cables, 6 earth switches and the Tilbury headhouse.

4.4 The Tilbury SEC will be surrounded by a 2.4m mesh or palisade security fence topped with an electric pulse fence to a height of 3.4m. Six new carparking spaces will be provided, to the east of the new headhouse, with three EV charging posts (comprising two charge outlets per post). One of the spaces will be a disabled parking bay.

4.5 The roads within the SEC will be tarmacked, however all other surfacing will comprise of gravel or other free draining stone material.

Tilbury Tunnel Headhouse

4.6 The Tilbury headhouse will be situated within the Tilbury SEC. The purpose of the Tilbury headhouse is to allow controlled, safe and secure access into the tunnel shafts; provide enclosure for ventilation fans and equipment to regulate the temperature in the tunnel; contain mechanical and electrical equipment and to house control equipment for the cable circuits.

4.7 The Tilbury headhouse will occupy an area of up to 481.75 m2 / 0.048ha (based on an indicative footprint of 23.5 m x 20.5 m) and have an approximate maximum building height of approximately 10m above ground level. Final details will be confirmed during the detailed design stage. The new headhouse will accommodate ventilation plant for the tunnel and shafts, a control room, with tally room, communications control, panels, mechanical plant and control panels, low voltage switch Room, 110V Battery / Uninterruptible Power Supply Room, Main fans room, shaft access via a staircase (but with space allocation for a lift, and lift motor room (if required), changing and shower room; and water closet.

4.8 Externally, the new headhouse will have a biodiverse roof, a standby generator (hardwired to the LV Switch Room) and a pedestrian access path.

4.9 An indicative visualisation of the proposed headhouse at Tilbury is shown at figure 2 below.

Fig.2

4.10 The exteriors and internal layout of the headhouse are shown on the Planning Drawing at **Core Documents: E3 to E:7**.

Land rights needed for the Tilbury SEC and Head House

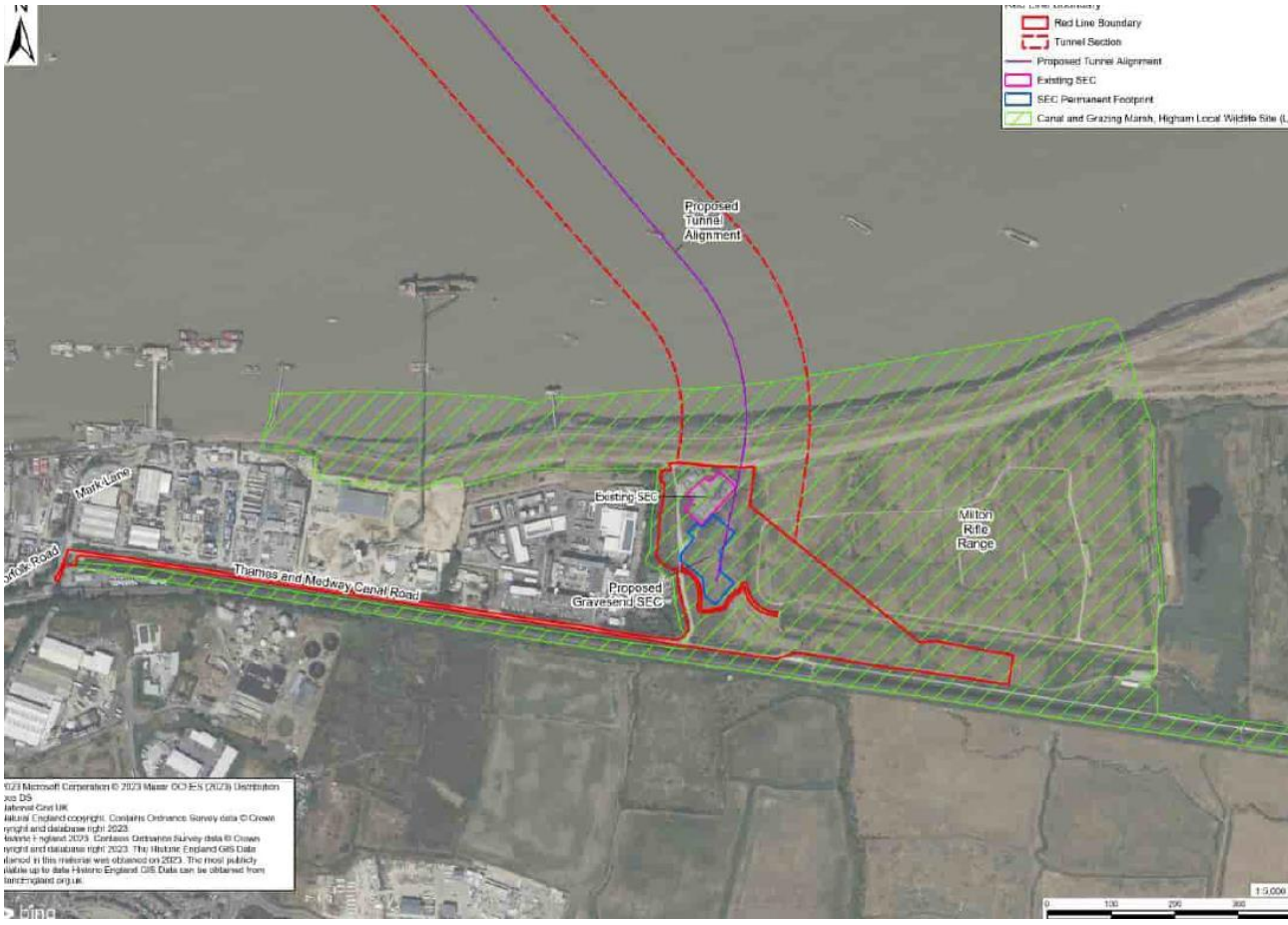
4.11 This land required for the Tilbury SEC and Head House is shown coloured pink on sheets 3 and 4 of the Order Maps (**CD:C2**) and comprises Plot numbers 3/11, 3/14, 4/2 and 4/3 of the Order Land, which is owned by the Port of Tilbury London Limited ("**PoTLL**").

Gravesend Sealing End Compound

4.12 The proposed Gravesend SEC will be located within a vegetated area which is part of the Canal and Grazing Marsh, Higham Local Wildlife Site, designated for its grassland habitats and on land

owned by National Grid. A plan showing the location is at **Fig. 3** below.

Fig. 3



4.13 To the north of the proposed SEC is the existing SEC serving the existing tunnel. The land immediately east is owned by the Royal Society for the Protection of Birds **("RSPB")** and is partially leased and used as a Police Training Centre for rifle shooting. The land immediately west comprises of the Thameside Campus (National Maritime Training Centre), Metropolitan Police Specialist Training Centre and Thames and the Medway Canal Association.

4.14 The Gravesend SEC will occupy an area of approximately 6,328m2 / 0.6328ha, however a larger area of approximately 37,000 m2 /

3.7 ha will be required during construction to accommodate equipment and storage areas.

4.15 Subject to final detailed design, the two new overhead line gantry structures within the Gravesend SEC will have a maximum height of approximately 13m.

4.16 The Gravesend SEC will be surrounded by a 2.4m mesh or palisade security fence topped with an electric pulse fence to a height of 3.4m. Nine new carparking spaces will be provided, six to the west of the new headhouse, and three to the north, just outside of the SEC. The roads within the SEC will be tarmacked, however all other surfacing will comprise of gravel or other free draining stone material with a Type 3 sub-base.

Gravesend Tunnel Headhouse

4.17 The Gravesend headhouse will be situated within the Gravesend SEC. As with the Tilbury SEC, the purpose of the Gravesend headhouse is to allow controlled safe and secure access into the tunnel shafts, contain mechanical and electrical equipment and to house control equipment for the cable circuits.

4.18 The Gravesend headhouse will occupy an area of approximately 230m2 / 0.023ha (based on an indicative footprint of 15 m x 16 m) and have an approximate maximum building height of 8 m above ground level. Final details will be confirmed during the detailed design stage. The new headhouse will accommodate a tunnel dampers room with access hatch for shaft hoist, an electric room containing Low Voltage switch gear, communication panels, Motor Control Centre panels, a Tally Room, a 110V Battery / Uninterruptible Power Supply Room, a Shaft access via a staircase, Changing and shower room and WC.

4.19 Externally, the new headhouse will have a biodiverse roof, a standby generator (hardwired to the electrical room) and a pedestrian access path.

4.20 An indicative visualisation of the proposed headhouse at Gravesend is shown in **Fig 4.** below.

Fig. 4

4.21 The exteriors and internal layout of the headhouse and SEC are shown on the Planning Drawings at **Core Documents: E9 to E13.**

Land needed for the Gravesend SEC and Headhouse

4.22 This land is shown coloured pink on sheet 7of the Order Maps (**CD:C2**) and includes Plot number 7/4 of the Order Land, which is owned by NGET but has been included in the Order to ensure there are no third party interests that could cause an impediment to the delivery of the Project.

Overhead Line Diversions

4.23 Once the tunnel is constructed and new cables installed, the cables will need to be connected into the new SECs and the wider OHL network. This activity will be carried out during system outages which will allow the existing towers and OHL spans to be removed, and new towers and OHL conductors to be installed. The Plan attached at **Appendix 1** shows an overview of the proposed changes to the existing OHLs.

4.24 At Tilbury, 3 existing towers will be removed and 1 new tower will be erected. At Gravesend, 1 tower will be removed and 1 new tower erected. A more detailed description of these removal and connection works is provided below.

Tilbury

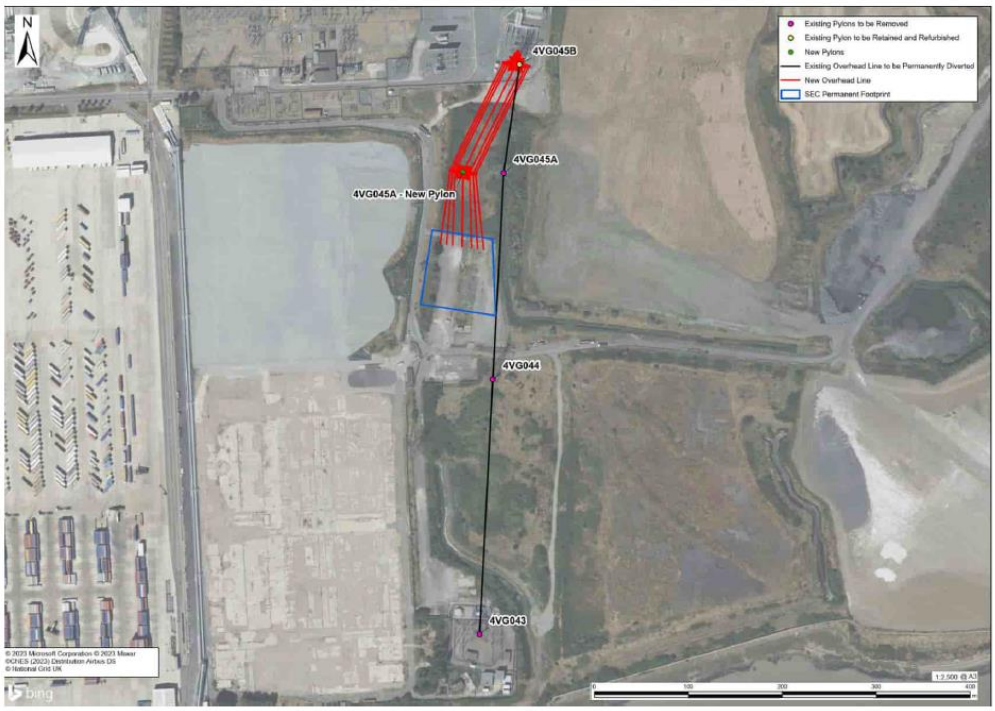
4.25 At Tilbury, terminal tower 4VG045A will be replaced with a new terminal tower, which will be erected adjacent to the location of the existing tower, to the north of the proposed Tilbury SEC. This will form the new commencement of the 400kV OHL. The existing terminal tower 4VG045B inside the Tilbury Substation will be refurbished.

4.26 Approximately 600m (3 spans of OHL conductor and OHL towers 4VG45A, 4VG44 and 4VG43) of the existing 400kV OHL will be removed.

4.27 Approximately 200m of new double circuit overhead line will be installed from the existing terminal tower (4VG45B) within the Tilbury Substation, to the new tower 4VG045A. This is illustrated in **Fig 5** below.

Fig. 5

Plate 3-6: Tilbury - OHL Diversions



Land rights needed for Tilbury OHL works

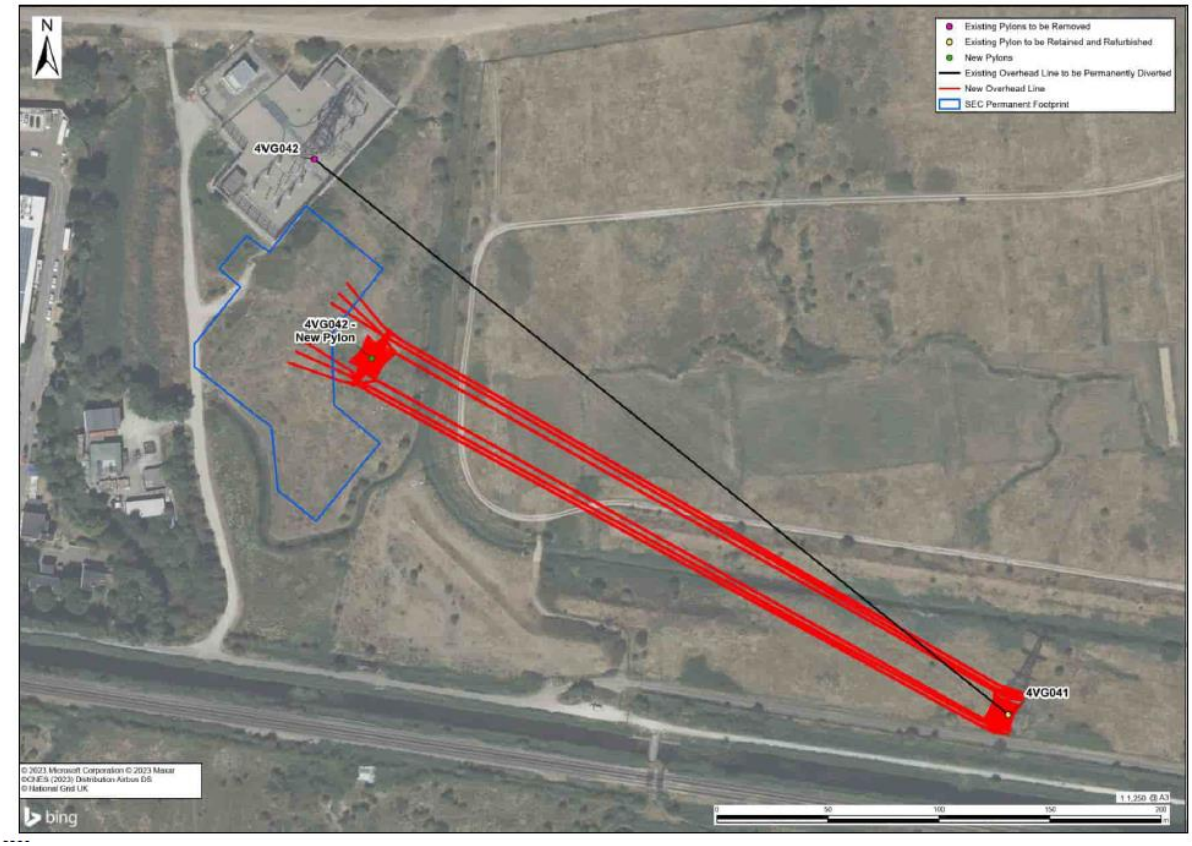
4.28 The land rights needed for these works are overhead line rights in respect of Plots 3/8, 3/9 **(CD:C1)** which are owned by POTLL and subject to a long lease in favour of National Highways. Plot 3/7 is also required for removal and realignment of OHLs. This is the existing NGET substation, OHL and Pylon and NGET already owns this land but it has been included in the Order to ensure that there are no third part interests which could prejudice delivery of the Project.

Gravesend

4.29 At Gravesend, approximately 400m of single span overhead line will be permanently removed and approximately 330m new double span overhead line will be installed between towers 4VG041 and

new tower 4VG042. The existing tower 4VG042 will be removed. Tower 4VG042 will be replaced by a new terminal tower which will be erected near the new SEC. The existing tower 4VG041 will be refurbished. This is illustrated in **Fig. 6** below.

Fig. 6



Land rights needed for the Gravesend OHL works

4.30 The land rights needed for the Gravesend OHL works are :

4.30.1 Decommissioning rights for the existing OHLs over plots 7/9, 7/10, 7/11, 7/12, 7/13, 7/14 and 7/15 all of which are owned by the RSPB, subject to a lease in favour of the Mayor's office for Policing and Crime; and

4.30.2 New OHL rights over plots 7/12 and 7/13.

Construction Phase - OHL Diversions - Installation of new terminal towers

4.31 As explained above, there will be two new terminal towers, one either side of the River Thames. To construct these, tower foundation installation would take place first, before any circuit outages on the existing overhead line. Temporary working areas around the proposed new tower locations would be prepared prior to foundation excavation. Each working area would be secured to delineate the working area to ensure impacts on sensitive habitats are kept to a minimum. Consideration would be given to varying the shape of the working area at each tower to avoid constraints identified prior to construction.

4.32 To install the terminal tower foundations, an area of approximately 6m by 6m (four excavation areas will be needed for each tower leg) will be required to be excavated. Piled foundations will be required to an approximate depth of between 14-20m. The first 4m in depth will be concrete filled. The new Tilbury terminal tower goes on Plot 3/9 (owned by PoTLL subject to a lease to National Highways) and the new Gravesend terminal tower goes on Plot 8/7 (owned by NGET, and included in the Order to ensure no third party interests could prejudice the works).

4.33 The steelwork required for the new terminal towers will either be erected by a crane, or with a derrick to erect the tower in small sections. Tower erection will require a large laydown and assembly area of approximately 50m x 50m for laying out and assembling the steelwork into the lifting sections. Steelwork will be delivered to site on trucks and assembled in sections around the tower base. A tractor with a light crane or tele-handler may assist in the moving of and erecting steelwork on the ground. The first panel will be lifted by the crane and manoeuvred into position over the

foundation stubs and fixed into place by locating the connecting bolts.

4.34 Once in place, the panel will be stayed to hold its position. Subsequent sections will be assembled using a controlled lift via a crane and staying sequence with each panel or boxed section bolted in turn to the previous erected panel until the tower is complete and secured.

Stringing of the New Overhead Conductors

4.35 Once the towers are built, the new conductors are hung. This is known as 'stringing'. Stringing is the method of positioning and pulling the new conductors between towers. There are two different ways to carry out this operation.

4.36 The first is non-tension pulling. This involves pulling the new conductor from the required point A to B via a tractor winch at ground level. The new conductor can be pulled over trestle tables, rather than the ground, so as to protect the new conductor as well as the underlying habitats.

4.37 Once the conductor is pulled to its required position, it is raised via a winch to its respective landing points on the tower arms.

4.38 Once the conductor is secure, a working platform can be raised to the working height point. This ensures operatives work at height safely. The conductor is then 'sagged' (tensioned to ensure mechanical and electrical correctness) via a winch. Once completed, the conductor is then attached to its landing point on the tower via its fittings, insulators and jumpers. This process is then repeated for each conductor,

4.39 The second stringing method is called tension stringing. This method keeps the conductor off the ground entirely. Working

platforms are raised at each tower and a running wheel attached to the arms of each tower.

4.40 Two hydraulic puller/tension machines are set up at each tower, one acting to pull the conductor and one acting to tension (pull back) the conductor. This enables the operatives to control the height and tension the conductor is pulled at, ensuring it is kept off the ground.

4.41 One puller tension machine is set at the base of the tower, whilst the other is positioned behind the other tower (set back by approximately 50m). If this method is used, their positions will be discussed with the ecological clerk of works as to the most appropriate positions for the tension machines, in relation to the existing habitats.

4.42 Lighter pilot rope is pulled through the puller tension machines and up to the running wheels. These will be pulled through the total span and this enables the conductor to be attached at the tension end, and the conductor to be pulled through the span without coming in to contact with the ground.

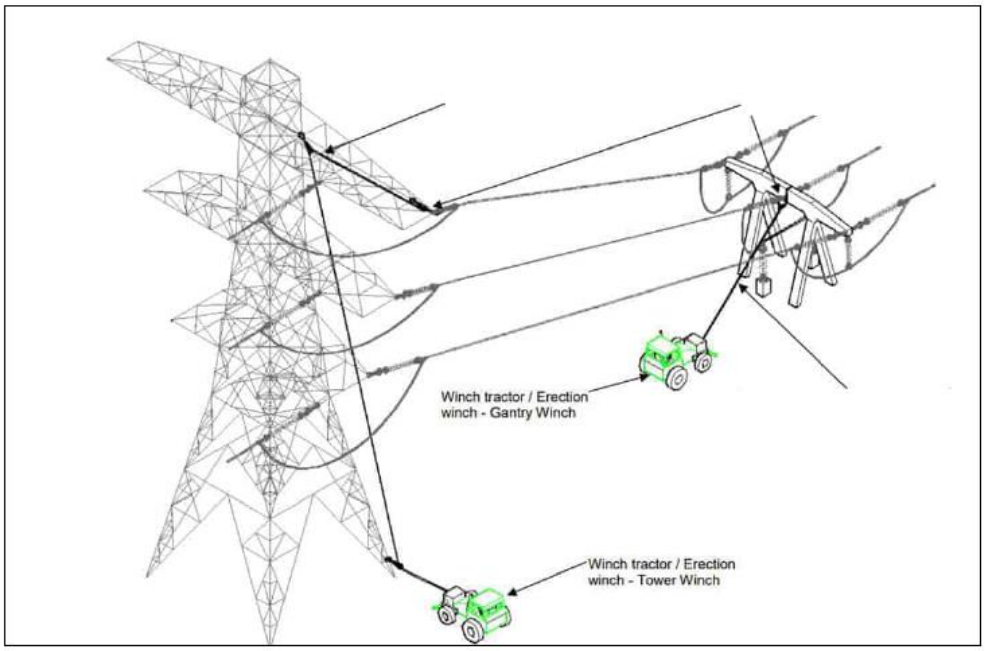
4.43 Once this is complete, the conductor is then sagged to the required tension, and secured with fittings, insulators and jumpers from the working platform.

Stringing of the Downleads (between the terminal tower and overhead line gantries in the SECs)

4.44 The conductor which runs from the new tower to the gantry within the SECs is called a downlead. This is attached via an insulated connection. A downlead connects the OHL to the substation equipment.

The downleads are installed via two tractor winches as shown below.

Fig. 7



4.45 These will pull the conductor to its landing point. The downleads are laid out on the ground and cut to their appropriate length. They are then attached to the tractor winches.

4.46 Once pulled to position, a mobile elevated work platform is raised to working height on the tower. The downlead is then attached to its landing point on the tower via its fittings, insulators and jumpers.

Foundation Works Required at Existing Tower at Gravesend

4.47 There may be a requirement to reinforce the foundations of existing tower 4GV041 at Gravesend. This will require excavating a pit approximately 6m by 6m at each foot to expose the foundation.

4.48 Once exposed, a new concrete slab is bound to the existing foundation, therefore adding strength and integrity. Once

completed, the excavations are back filled. This is subject to final detail design.

Removal of Existing Overhead Line Infrastructure

4.49 Existing towers 4VG043, 4VG044 and 4VG045A at Tilbury, and tower 4VG042 at Gravesend require removal. These towers are shown at **Fig 5 and Fig 6** and **Appendix 1**. The existing OHL conductors would be removed by lowering them on to trestles rollers or wooden batons which are placed in line underneath the conductor and rolled in.

4.50 Tower dismantling and removal can be carried out using a variety of methods depending on the tower type, location and accessibility. Due to the location of these existing towers and their surrounding land uses and habitats, it is likely the towers will be dismantled via cranes.

4.51 Before the tower structures can be removed, the conductor and fittings are removed. For safety reasons it may be necessary to 'backstay' the towers. This would involve approximately three 1.2 tonne concrete blocks (2m by 1m), called 'backstays' being placed onto a sledge (via tractor) at strategic locations. The concrete blocks act as a safety device, typically placed approximately 35m back from the new tower and connected by wire rope.

4.52 The localised placement of the backstay (concrete block) positions will be discussed with the ecological clerk of works as to their most appropriate positions in relation to the existing habitats.

4.53 Once all backstays are in position, working platforms are raised to working height at the towers, and insulators and fittings are lowered to the ground via tractor and winch. Once this is completed, the conductor can then be lowered to the ground where

it will rest on trestles tables, or if more suitable, tarpaulin. This process will be repeated for each conductor.

4.54 Once the conductor is lowered on to the trestle tables or tarpaulin, operatives, on foot, with handheld hydraulic cutters, cut the conductor into manageable pieces. These pieces are rolled up and carried back to a central location for pick up.

4.55 The towers are then dismantled. A large crane is positioned on a crane pad at the tower location. The crane pad will be approximately 20m x 10m constructed from plastic or metal panelling. It will take approximately one day to dismantle a tower using a crane (following advanced site preparation i.e. installation of the crane pad and progressing of advanced works on the tower prior to commencement of works with the crane). The sections of the tower will be broken up as they are lowered to the ground using a steelwork breaker/ mechanical shears fitted to an excavator. The cut sections of the tower are then placed into waste skips (which could be located within the crane pad or on temporary track way joining the crane platform) and removed from site for reuse wherever possible or recycling where not possible.

4.56 As the tower is dismantled and laid down in sections, gas torches or a hydraulic shearer mounted on a 360-degree excavator will be used to break up the tower steelwork into small sections and load into skips for reuse or recycling.

4.57 Foundations are generally removed to a minimum depth of 1m below ground level, with excavation usually no more than 0.5m by 0.5m. This work is undertaken using a tracked excavator which digs around the concrete 'muff' to a depth of approximately 1m. The excavator is then be used to break the concrete around the steel 'raker' bar within the concrete before all concrete is then removed from the excavation and the remaining steel 'raker' bar

cut to a depth of approximately 1m. This action would then be repeated for the remaining tower legs and the land reinstated.

4.58 The OHL diversions, from foundations, tower build, and stringing will be completed as the final phase of the Project in 2028 and be completed in under one year. The removal of the existing towers will be completed only once the new equipment is energised, and removal is expected to take approximately three months.

5. RESPONSE TO OBJECTIONS

5.1 I am aware that there are now two outstanding objections to the Order. They both relate to the track owned by Network Rail adjacent to the railway line and Thames and Medway canal towpath on the south side of the River Thames. Neither raise any technical matters relating to the OHL works, the SEC or the headhouse works or suggest that the works that I have described in my evidence are unnecessary. As such, I do not respond further to the objections.

6. SUMMARY AND CONCLUSIONS

6.1 My name is David Rogerson and I am a Lead Transmission Engineer with National Grid Electricity Transmission Plc, specialising in Over Head Lines and High Voltage Cable Technology. I have eighteen years' design experience with twelve years in my role with NGET where I am authorised by National Grid's Business Procedure 141 for both OHL and cable design assurance.

6.2 I have been working on the Project since 2020 as an OHL design assurance engineer.

6.1 In my evidence I have described the works needed to carry out the SEC and OHL aspects of the Project with reference to the illustrative drawings embedded within/appended to my evidence. I

have also described the land and rights that are needed to enable those works to be undertaken safely.

6.2 The Project will connect into two existing 400KV overhead lines known as Kingsnorth to Tilbury and Grain to Tilbury which are proposed to be refurbished as part of a separate package of works once the Project has completed.

6.3 The new Tilbury SEC is proposed to be developed on an area of existing hardstanding in Tilbury, Thurrock, on land owned by the Port of Tilbury London Limited, and which was formerly Tilbury Power Station.

6.4 The Tilbury SEC will contain new XLPE cables, new cable terminations (polymeric), 12 x new cable support steel structures with buried concrete foundations, concrete surface troughs for new cables, water tank for firefighting purposes, 6 x surge arresters for protection of underground cables, 6 earth switches and the Tilbury headhouse. The roads within the SEC will be tarmacked

6.5 The SEC will contain the headhouse and the purpose of the Tilbury headhouse is to allow controlled, safe and secure access into the tunnel shafts; provide enclosure for ventilation fans and equipment to regulate the temperature in the tunnel; contain mechanical and electrical equipment and to house control equipment for the cable circuits.

6.6 The Tilbury headhouse will occupy an area of up to 481.75 m2 and will accommodate ventilation plant for the tunnel and shafts, a control room, with tally room, communications control, panels, mechanical plant and control panels, low voltage switch Room, 110V Battery / Uninterruptible Power Supply Room, Main fans room, shaft access via a staircase (but with space allocation for a lift, and lift motor room (if required), changing and shower room; and water closet.

6.7 The proposed Gravesend SEC will be located within a vegetated area which is part of the Canal and Grazing Marsh, Higham Local

Wildlife Site, designated for its grassland habitats and on land owned by National Grid.

6.8 To the north of the proposed SEC is the existing SEC serving the existing tunnel. The Gravesend SEC will occupy an area of approximately 6,328m2 / 0.6328ha, however a larger area of approximately 37,000 m2 / 3.7 ha will be required during construction to accommodate equipment and storage areas. The roads within the SEC will be tarmacked.

6.9 The Gravesend headhouse will be situated within the Gravesend SEC. It will occupy an area of approximately 230m2. The new headhouse will accommodate a tunnel dampers room with access hatch for shaft hoist, an electric room containing Low Voltage switch gear, communication panels, Motor Control Centre panels, a Tally Room, a 110V Battery / Uninterruptible Power Supply Room, a Shaft access via a staircase, Changing and shower room and WC.

6.10 Once the tunnel is constructed and new cables installed, the cables will need to be connected into the new SECs and the wider OHL network. This activity will be carried out during system outages which will allow the existing towers and OHL spans to be removed, and new towers and OHL conductors to be installed.

6.11 At Tilbury, 3 existing towers will be removed and 1 new tower will be erected. At Gravesend, 1 tower will be removed and 1 new tower erected.

6.12 There will be two new terminal towers, one either side of the River Thames. To construct these, tower foundation installation would take place first, before any circuit outages on the existing overhead line. Temporary working areas around the proposed new tower locations would be prepared prior to foundation excavation.

6.13 To install the terminal tower foundations, an area of approximately 6m by 6m (four excavation areas will be needed for each tower leg) will be required to be excavated. Piled foundations will be required to an approximate depth of between 14-20m. The first 4m in depth will be concrete filled.

6.14 The steelwork required for the new terminal towers will either be erected by a crane, or with a derrick to erect the tower in small sections. Tower erection will require a large laydown and assembly area of approximately 50m x 50m for laying out and assembling the steelwork into the lifting sections. Steelwork will be delivered to site on trucks and assembled in sections around the tower base.

6.15 Once the towers are built, the new conductors are hung. This is known as 'stringing'. Stringing is the method of positioning and pulling the new conductors between towers. There are two different ways to carry out this operation.

6.16 The first is non-tension pulling. This involves pulling the new conductor from the required point A to B via a tractor winch at ground level.

6.17 The second stringing method is called tension stringing. This method keeps the conductor off the ground entirely. Working platforms are raised at each tower and a running wheel attached to the arms of each tower.

6.18 If this method is used, their positions will be discussed with the ecological clerk of works as to the most appropriate positions for the tension machines, in relation to the existing habitats.

6.19 A downlead connects the OHL to the substation equipment. The downleads are installed via two tractor winches

6.20 There may be a requirement to reinforce the foundations of existing tower 4GV041 at Gravesend. This will require excavating a pit approximately 6m by 6m at each foot to expose the foundation.

6.21 Existing towers 4VG043, 4VG044 and 4VG045A at Tilbury, and tower 4VG042 at Gravesend require removal.

6.22 Due to the location of these existing towers and their surrounding land uses and habitats, it is likely the towers will be dismantled via cranes. Before the tower structures can be removed, the conductor and fittings are removed. For safety reasons it may be necessary to 'backstay' the towers.

6.23 The localised placement of the backstay (concrete block) positions will be discussed with the ecological clerk of works as to their most appropriate positions in relation to the existing habitats.

6.24 The towers are then dismantled. A large crane is positioned on a crane pad at the tower location. The crane pad will be approximately 20m x 10m constructed from plastic or metal panelling. It will take approximately one day to dismantle a tower using a crane (following advanced site preparation i.e. installation of the crane pad and progressing of advanced works on the tower prior to commencement of works with the crane). The sections of the tower will be broken up as they are lowered to the ground using a steelwork breaker/ mechanical shears fitted to an excavator.

6.25 As the tower is dismantled and laid down in sections, gas torches or a hydraulic shearer mounted on a 360-degree excavator will be used to break up the tower steelwork into small sections and load into skips for reuse or recycling.

6.26 Foundations are generally removed to a minimum depth of 1m below ground level, with excavation usually no more than 0.5m by 0.5m. This work is undertaken using a tracked excavator which digs around the concrete 'muff' to a depth of approximately 1m. The excavator is then be used to break the concrete around the steel 'raker' bar within the concrete before all concrete is then removed from the excavation and the remaining steel 'raker' bar cut to a depth of approximately 1m. This action would then be repeated for the remaining tower legs and the land reinstated.

6.27 The OHL diversions, from foundations, tower build, and stringing will be completed as the final phase of the Project in 2028 and be completed in under one year. The removal of the existing towers will be completed only once the new equipment is energised, and removal is expected to take approximately three months.

6.28 I am aware that there are now two outstanding objections to the Order. Neither raise any technical matters relating to the OHL

works, the SEC or the headhouse works or suggest that the works that I have described in my evidence are unnecessary.

6.29 In summary, in my view no more land than is necessary for the purposes of the safe construction, operation and maintenance of the Project has been included in the Order.

7. DECLARATION

7.1 I confirm that the evidence prepared for this Inquiry and contained within this statement of evidence are my true and professional opinions. I confirm that I have understood and complied with my duty to the Inquiry as an Expert Witness and have provided my evidence impartially and objectively. I confirm that I have no conflicts of interest

David Rogerson

13th May 2025