OVERHEAD POWER TRANSMISSION LINES AND ASSOCIATED STRUCTURES

Lower Lea Valley

London Boroughs of Hackney, Newham, Tower Hamlets and Waltham Forest

A built heritage assessment

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PRE-CONSTRUCT ARCHAEOLOGY

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Archaeological built heritage assessment

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Executive Summary

This report comprises an assessment, carried out between March and May 2007 of the overhead transmission lines and their associated structures in the Lower Lea Valley. An accompanying programme of historical research has discerned a chronology for the development of the structures. This assessment was carried out by MoLAS-PCA on behalf of the London Development Agency.

Overhead transmission lines were first erected in the Lower Lea Valley in 1953, as part of a 132kV line transmitting electricity from Brimsdown power station to Brunswick Wharf. Two new overhead transmission lines were installed in 1971; a 275kV line and a 132kV diversion for local electricity supply, which both ran from West Ham power station to Hackney substation. Some of the transmission towers may have been reused in 1971, as they share the same footprint as many erected in 1953, however these early towers have all been renewed.

The Three Mills Conservation Area Character Appraisal has highlighted the transmission towers as having a negative visual impact on their surroundings; their removal will be of significant visual benefit, and they do not merit any statutory protection.

A series of site visits has resulted in the comprehensive photography of the transmission towers, substations, associated equipment and their setting in the landscape. This is the most appropriate recording strategy for the overhead transmission lines, the associated infrastructure, and their setting within the landscape. Such a survey provides a full visual record accompanied by a written account, and is appropriate for a building of a well-known type for which existing documentation is in other respects adequate.

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1 Introduction

1.1 Origin and scope of the report

MoLAS-PCA has been commissioned by the London Development Agency (LDA) to carry out a built heritage assessment of the two overhead transmission lines which transmit high voltage electricity from West Ham substation to Hackney substation, and their associated structures located in the Lower Lea Valley (Fig 1a and Fig 1b).

The lines are owned and maintained by National Grid Electricity Transmission plc (NGT) and Electricité de France Energy (EDFE). The conductors are carried on 27 and 25 lattice steel towers (pylons) respectively, and pass through the London Boroughs of Hackney and Newham. The two overhead transmission lines will be demolished and the electricity conductors diverted underground, into two tunnels.

The built heritage assessment has been carried out in accordance with the standards specified by the Institute of Field Archaeologists (IFA 1999) and English Heritage (EH 2006). Under the 'Copyrights, Designs and Patents Act' 1988 MoLAS-PCA retains the copyright to this document.

Note: within the limitations imposed by dealing with historical material and maps, the information in this document is, to the best knowledge of the author and MoLAS-PCA, correct at the time of writing. More information about the nature of the structures may require changes to all or parts of the document.

1.2 Site status

The structures are not listed or scheduled.

Transmission towers YYJ019 and YYJ021, on the National Grid 275kV overhead power line and EDFE114, its associated sealing end compound, and EDFE115, on the EDFE 132kV line are located in the Three Mills Conservation Area.

1.3 Aims and objectives

'The Lower Lea valley is currently characterised by a 20th century industrial landscape dominated by large pylons carrying overhead electrical cables. A built heritage assessment of the power lines and towers will inform a subsequent mitigating recording programme, which will contribute to the discharge of the archaeological/ built heritage conditions. The built heritage record will aim to contribute to our understanding of the powerlines' character and significance as part of the historic industrial landscape' (EH 2005a, 2). The main aims and objectives of research are as follows:

- To describe and characterise both the transmission line as a whole and its elements (towers, conductors, and substations). Location information should be provided on a GIS dataset.
- To identify the type (suspension, deviation or terminal tower), and design of each tower. *See Development Near Lines* (2001) National Grid, Appendix II for further information about tower types.
- To identify the design of each tower by its line designation code (e.g. L2); to indicate whether these examples are typical or rare.
- Describe the conductors and their associated insulators, spacers and dampers.
- Provide supporting information on the associated West Ham and Hackney substations, including dates of installation, and relevant details of plant including transformers and switchgear.
- To identify any major modifications to, or extensions of the transmission line following its installation.
- To summarise the origins and development of electricity transmission in the Lower Lea Valley.
- It may be useful to outline the regional and national context of electricity transmission policies and developments
- To provide a concise summary of the development of power transmission, including an account of the design of latticed steel towers in Britain. This should provide a technological/typological context to the present study (EH 2005a, 3).

1.4 Method of assessment

The assessment comprised a series of site visits carried out on six days in March and May 2007. Examination of the physical fabric of the transmission towers was limited to what could be observed from the ground or from higher vantage points, such as the Greenway footpath along the top of the Northern Outfall Sewer. Some transmission towers were located in secure areas to which access could not be gained, including Stratford International Station; in such instances the transmission towers were observed from the street. Access to the interiors of electricity substations could not be gained; fortunately the majority of the transforming and distribution equipment at Hackney and West Ham substations are housed externally, enabling observation and photography from the street.

The examination has resulted in drawings, notes and 660 photographs which will be deposited in due course in the London Archaeological Archive Resource Centre (LAARC).

1.5 Sources consulted

The historical information largely derives from documentary evidence; in addition to schematic maps showing the operation of the transmission system in the London area and wayleave agreements made with owners of land on which transmission towers were situated, the most useful resources consist of minute books of meetings of the Finance, Technical and Management Committees of the London Electricity Board, held at the London Metropolitan Archives (LMA). These detail the implementation and management of transmission and distribution schemes. The minute books are closed to public access for a period of fifty years, however, meaning that only the minutes of meetings held between Nationalisation in 1947 and 1956 can be consulted. It has not been possible to

gain any information relating to the overhead transmission lines installed in 1971, and this will not be possible until 2022.

Several documents relate to the situation of electricity transmission networks in the landscape. *The Holford Rules (Appendix One)* were drawn up in 1959 by Lord Holford, an advisor to the Central Electricity Generating Board (CEGB), and form a set of guidelines for the siting of overhead transmission lines in rural and urban landscapes. *The Horlock Rules* were drawn up by the National Grid in the 1980s and similarly give guidance on the location of substations in the landscape (*Appendix Two*). National Grid plc have also produced two guides providing advice for anyone involved in the planning, design and development of sites and buildings near high voltage overhead electricity lines; *Development near lines: planning and amenity aspects of high voltage transmission lines and substations* (National Grid 2001) and *A sense of place: design guidelines for development near high voltage overhead lines* (National Grid 2003).

English Heritage provides guidance with regard to the treatment of buildings in conservation areas, whether statutorily listed or not (EH 2005b). The latest guidance on the selection of buildings designation as heritage assets deals explicitly with electricity supply and distribution structures as a building type (EH 2007a & 2007b).

2 Legislative and planning framework

2.1 National planning policy guidance

2.1.1 Built Heritage

In 1994, the Department of the Environment published its *Planning Policy Guidance Note 15: planning and the historic environment* (PPG15). This sets out the Secretary of State's policy on the visible remains of historic buildings, spaces and structures, and provides recommendations many of which have been integrated into local development plans. The key points in PPG15 can be summarised as follows:

> It is fundamental to the Government's policies for environmental stewardship that there should be effective protection for all aspects of the historic environment. The physical survivals of our past are to be valued and protected for their own sake, as a central part of our cultural heritage and our sense of national identity. They are an irreplaceable record which contributes, through formal education and in many other ways, to our understanding of both the present and the past.
>
> The Secretary of State attaches particular importance to early consultation with the local planning authority on development proposals which would affect historic sites and structures, whether listed buildings, conservation areas, parks and gardens, battlefields or the wider historic landscape. There is likely to be much more scope for refinement and revision of proposals if consultation takes place before intentions become firm and timescales inflexible.
>
> Local planning authorities should also consider, in all cases of alteration or demolition, whether it would be appropriate to make it a condition of consent that applicants arrange suitable programmes of recording of features that would be destroyed in the course of the works for which consent is being sought.

2.2 Local Planning Policy

2.2.1 Conservation Areas

Conservation areas are 'areas of special architectural and historic interest, the character and appearance of which it is desirable to preserve or enhance' and special efforts are made to retain the unique character of a conservation area and its buildings. The Three Mills Conservation Area falls partly in Zone 13 of the Olympic Park Area, and contains four of the transmission towers featured in this study.

2.2.2 Planning conditions

The Lower Lea Valley Olympic & Legacy Powerlines Undergrounding planning application involves the construction of twin underground cable tunnels and the removal of the overhead powerlines. The decommissioning works for the overhead lines will take place after commissioning of the cable tunnels in July 2008.

The following Archaeological and built heritage conditions were attached to the grant of planning permission. LBH (Application No 2005/1158) and LBN (Application No P/05/0824):

- LBN; Condition 30. Prior to the commencement of the main works a programme of archaeological investigation and work shall be completed in accordance with a written scheme for investigation and work relating to any land that may be disturbed by the main works which has been submitted and approved in writing by the local planning authority. Such a scheme shall comprise a methodology for recording and historic analysis, which considers building structure, architectural details and archaeological evidence.

  Reason: Archaeological remains may survive on the site. The local planning authority wishes to secure the provision of archaeological investigation and the subsequent recording of any remains prior to the development, in accordance with the guidance and model condition set out in PPG15.

- LBN; Condition 34. Prior to the commencement of the Main Works a programme of archaeological investigation and work shall be completed in accordance with a written scheme for investigation and work which has been submitted and approved in writing by the Local Planning Authority. Such a scheme shall comprise a methodology for recording and historic analysis, which considers building structure, architectural detail and archaeological evidence.

  Reason: Archaeological remains may survive on the site. The Local Planning Authority wishes to secure the provision of archaeological investigation and the subsequent recording of any remains prior to development, in accordance with the guidance and model condition set out in PPG15.

Following the issue of these planning conditions English heritage issued guidance on requirements for the recording and assessment of the overhead power lines and towers (EH 2005a, 2). The main aims and objectives of this guidance are noted above (see 1.3).

3 Historical background

The Electric Lighting Acts of 1882 and 1888 encouraged Local Authorities to supply electricity in their own areas, and eventually they had rights of compulsory purchase over private electricity generating undertakings (VCH 1966, 46).

A provisional Order under the Electric Lighting Act was granted to the West Ham Corporation in 1892, enabling the Borough Council to supply electricity throughout West Ham. In 1895 a small generator was installed behind the Public Hall in Barking Road, Canning Town, which lit the hall, the public library, Mansfield House Settlement, which ran educational and social activities and savings clubs, and a neighbouring shop. In 1898 a power station was constructed at Abbey Mills, to provide a general supply. This short-lived installation was replaced in April 1904 by a larger power station at Canning Town, in Quadrant Street, on the site of the former municipal sewage works. The borough council advertised to attract industrial consumers to West Ham, even producing a publicity leaflet in German. As the take-up of electricity increased, in both commercial premises and domestic homes, the Canning Town power station was extended, several times between 1904 and 1914 and again in 1922. By 1926 West Ham had the largest municipal electricity undertaking in the London area (VCH 1966, 100).

In 1893 the Hackney Electric Lighting Order was granted to the Hackney District Board of Works, and a generating set was installed at Hackney Baths in Lower Clapton Road, supplying the Town Hall with lighting. The foundation stone for the electricity generating station in Millfields Road was laid in October 1900, and 'with it was laid the foundation of a civic enterprise in the course of time to be an object of pride to the Borough' (Hackney Borough Council 1932, 5) and the station opened one year later. Like the Canning Town operation, it was extended further in 1927, 1932 and March 1939, when a new plant accommodating a boiler house, turbine house, switchgear and cooling tower was opened. The external surface of the tower was painted in order to camouflage the structure from air observations, six months prior to the outbreak of the Second World War (Hackney Borough Council 1939, 10). An Act of Parliament of 1906 enabled Hackney Borough Council to develop the trade and sale of apparatus and appliances, and carry out installation and wiring. A sales department was established at Millfields Power Station in 1908; in 1910 this transferred to a showroom at 306 Mare Street (Rawll 1961, 5). Electricity provision did not lie solely in the hands of the Local Authorities; private power companies were also established, which supplied premises which used electricity for power; they could not supply it to premises which required electricity only for lighting, however.

In the 1880s and 1890s electricity was little used except for lighting, so entirely self-contained supply systems, like those operated by the West Ham Corporation and Hackney Borough Council, were not problematic. There were advantages in being able to generate power at high voltages for transmission over large areas, and there were attempts to increase the efficiency of electricity supply in the London area by concentrating generating at a few large stations.

3.1 Overhead power lines and the evolution of the National Grid

Overhead power lines were used from the earliest days of electricity provision; companies were formed to provide systems for lighting, and electricity from a public mains supply was cheaper than installing individual generators on premises. Some early electricity suppliers fixed overhead power lines to private buildings, but most, especially in city centres, where more electricity was used, buried electricity cables under the streets; in densely developed industrial areas there was no room for distribution poles, and many Local Authorities rejected them on aesthetic and environmental grounds (Hannah 1979, 5). Overhead lines were a cheaper system of distributing electricity than underground cables, however, and their adoption could make the difference between financial failure and success for a bulk supply or interconnection scheme (ibid, 80).

Throughout the early 20th century, the number of electricity suppliers in Britain continued to grow. During the 1920s there was pressure on the British Government to establish a transmission network which would link the whole country, enabling electricity to be generated in the most efficient stations and conveyed to wherever it was needed. There were several advantages to such a system; the cost of generation varied greatly between power stations, and it was in the consumers' interest to be linked to the most economical stations. A network of stations also increased the security of the supply; if a station suffered a breakdown, its load could be supplied from elsewhere (Bowers 1982, 162). The development of a 'National Grid' would not affect local arrangements for the distribution of electricity, but it would make it advantageous for some of the local authority undertakings to close their own generating stations and buy power in bulk from larger undertakings (VCH 1966, 76).

In 1925 a Government committee was established to 'review the national problems of the supply of electrical energy' and to report on 'the policy which should be adopted to ensure its most efficient and effective development'. The committee proposed the establishment of an independent body, the Central Electricity Board (CEB), with the duty of establishing a 'gridiron', later the National Grid; a system of high voltage transmission lines, connecting selected power stations and the existing distribution systems. 132 kV was adopted as the standard for primary transmission lines, with secondary transmission at 66kV and 33kV. Conductors, insulators, pylons, protective systems and control arrangements were designed prior to construction (ibid, 162).

The construction of transmission towers provoked the opposition of groups concerned with visual amenity; the National Grid would extend into large stretches of the countryside at a time when there was an increased concern about the advance of commercialism in rural areas. To this end, the architect Sir Reginald Blomfield was commissioned by the CEB to design the transmission towers (Hannah 1979, 116). Blomfield was an architect and garden designer of considerable standing, being responsible for the construction of the Carlton Club in Pall Mall and the remodelling of Regent's Street in the 1920s (Fleming et al 1999, 57) and he based his design on the transmission towers used in America (Fig 2). The CEB hoped that the transmission towers and lines hung between them would remind the public of the gentle curves of a suspension bridge; Blomfield suggested that more curves should be added to the design to increase its visual appeal; however, this was rejected on grounds of cost. In parts of the Lake District, the Sussex Downs and the New Forest the CEB resorted to expensive

rerouting and burying of power lines to preserve areas of natural beauty (Hannah 1979, 117-8). The construction of the grid took eight years, and by the end of 1935 the whole of Britain was linked, except for the north-east of England, which had its own electricity supply network developed by the North Eastern Electric Supply Co (NESCo),

After the Second World War the government decided to take the whole electricity supply industry into public ownership. The Bill was introduced into Parliament in December 1946, and the Electricity Act was passed in 1947. The industry was nationalised on 1 April 1948, when the responsibility for the supply and distribution of electricity passed from the Local Authorities and private companies to fourteen separate statutory Area Electricity Boards, of which the London Electricity Board was one (Bowers 1982, 163).

After nationalisation, extension of the transmission system in the London area became necessary, as new points of supply, where electricity could be distributed from, and additional outlets from new generating plants, had to be added. The issue of where to locate extra power lines and sub surface cables had already been identified in 1920:

> 'Apart from any question as to the economical limit of transmission distances, which may in the future be much longer than at present, owing to the progress in the manufacture of very high tension cables, there would be the physical difficulty of accommodating the large number of cables which would have to be laid via the public roads or the railways in order to transmit electricity in large quantities, from the lower reaches of the Thames, to the central and western districts of Greater London. The difficulty would be relieved, so far as regards North East London, by the utilisation of the Northern Outfall Sewer of the London County Council' (Lacey 1920, 47).

The Northern Outfall Sewer – which crosses the centre of the study area – had already been utilised for electricity distribution. In 1903 a license was granted to the East London Water Works Company to lay an electric main along the sewer embankment; this would serve the company's new pumping station at Old Ford and connect the Core Network Main under Wick Lane. In return the company paid the LCC an annual rent of one shilling (Fig 3 LMA: ACC/2558/MW/SU/01/033/1690). The Northern Outfall Sewer does not seem to have been used on a more formal basis for the widespread distribution of electricity, however.

Additional supplies to the newly nationalised British Railway also had to be accommodated (Pugh 1957, 494). Most of this additional mainline transmission capacity was provided by underground cable, with the exception of a 132kV overhead line, traversing east London from Brunswick Wharf to Brimsdown (Fig 4–Fig 6), which appears to have followed at least part of the course of the present National Grid overhead powerlines. Further lower capacity overhead lines and sub surface cables were installed, to secure supplies. The minutes of meetings of the London Electricity Board technical committee (LMA/4278/02/016) outline plans to reinforce electricity supplies between West Ham power station and Leyton sub station, during the winter of 1950-51. The scheme would cost £500,000, half of which would be spent on oil filled cables, to be buried below ground, with a capacity of 66kV, although the cables would operate at 11kV. This line is shown on a 1953 map of existing 132, 66, 33 and 22kV circuits in the London area (Fig 7 [London Electricity Board, 1953]).

By 1970 the London Electricity Board held responsibility for over 35 miles of overhead lines, all of 132kV and below, transferred from the Central Electricity Generating Board (CEGB), compared with 17,800 miles of sub-surface cable (LEB 1970, 3).

3.2 Construction of the existing lines

Records show that a new 275kV line connecting Barking power station and Hackney substation, housed in part of the former Millfields power station, was constructed in 1971, along with a 132kV deviation following a similar route, utilising some of the existing transmission towers of the Brunswick Wharf to Brimsdown line, which was then partially decommissioned.

The electricity companies and the National Grid owned many sites where power stations and sub stations stood, but very few locations of transmission towers. To this end, landowners were, and still are, compensated for having overhead powerlines crossing, or transmission towers located on, their land. The table below summarises the annual payment scale in 1971 (LMA: ACC/2558/LC/03/3298).

The base dimensions of a transmission tower (in feet)	**Payment received per tower, per annum**
Under 15x15	£0.25
15x15 – 25x25	£0.47
25x25 – 35x35	£0.63
35x35 – 45x45	£0.95
45x45 and over	£1.25

The Lee Conservancy Board were compensated for accommodating 'six conductors for transmitting electricity, one earth wire and part of a tower for supporting the same' (LMA: ACC/2558/LC/03/3305) which comprised part of the 132kV deviation. This transmission tower is now identified as EDFE097 (PKD29), part of the EDFE chain of transmission towers (Fig 8). The Lee Conservancy Board were also compensated the sum of 5p per annum for new lines crossing their land on the northern side of Carpenter's Road, between the present transmission towers YYJ014 and YYJ015. This new line was part of the 275kV connecting Hackney and Barking power stations (Fig 9 [LMA: ACC/2558/LC/03/3306]).

The new 275kV line and the 132kV deviation made use of the existing overhead powerline connecting Brunswick Wharf in the south with Brimsdown, which was constructed *c* 1953. The transmission towers were adapted for reuse when the new line and the deviation were installed. Tower EDFE107 (PKD18) is one such example; the tower is currently used as a suspension tower but Ordnance Survey mapping of the 1960s (Fig 4–Fig 6) suggests the site was used for a terminal tower, where lines either terminate at a sub station, which is not visible on the map, or are connected to underground cables.

The predominant features of such a tower are the wider arms at the top of the tower, the middle and lower arms being progressively shorter, to allow the conductors to pass unhindered to the ground. EDFE107 does not possess such a feature, suggesting that the

arms were replaced when the tower was converted to a suspension tower, or that the whole tower was replaced, perhaps reusing the original foundations.

The CEGB's 275kV line was supplied by the electricity generating station at West Ham, which closed in 1984; it was also supplied by Brimsdown, Barking, West Thurrock and Tilbury generating stations (Brian Mead, pers comm.). The LEB's map of operational main circuits in the London area of 1982 (Fig 10 [LMA/4278/02/167]) shows the present National Grid line operated with a 275kV circuit, and the EDFE line used a 132kV single circuit. The London Electricity Board's 132kV line is shown on a schematic map of 1986 (Fig 11).

4 Description and discussion

4.1 Overhead power lines – terminology and components

An overhead power line consists of three main components:

- The transmission towers, or 'pylons'.
- The conductors. These are the wires strung between the pylons, which are used to transmit electricity.
- The transmission route (National Grid 2003, 23).

An overhead line route uses three main types of lattice steel tower (or pylon). These are:

- Suspension towers. These support the conductors on straight stretches of line (Fig 12).
- Deviation towers. These occur at points where the route changes direction (Fig 13).
- Terminal towers. Where lines terminate at substations or are connected to underground cables at a sealing end compound (Fig 14).

Guidelines for the routeing of new overhead lines were formulated by Lord Holford, advisor to the Central Electricity Generating Board, in 1959. The 'Holford Rules', as they are known, are contained in Appendix One (Baptista 2003, 106-8):

The size, height and spacing of transmission towers are determined by topographical, environmental and operational considerations, and when selecting a new route, various factors have to be taken into account. Electricity distributors seek to reduce the visual effect of a line in terms of the number of people affected and the degree to which they are affected. As a consequence, routes generally avoid crossing the highest contours, where pylons would be more prominent when viewed from below. When viewed from principal viewpoints, an overhead line should be viewed against a background of existing landscape or other development rather than against sky (National Grid 2001, 6-9).

A number of components are used to fix the conductors to the transmission tower, and ensure its safe operation.

- The cross arms. These are horizontal steel lattice arms, occurring in three rows of pairs, from which the insulators are suspended. On a suspension tower the middle pair of cross arms is usually longer than the lower and upper pairs, in order to increase the safe distance between the conductors (Fig 15). A terminal tower has longer cross arms at the upper level, becoming progressively shorter further down the tower, in order for the conductors to pass unhindered to ground level (Fig 16). This arrangement can be achieved by adding extensions to the upper level cross arms. The cross arms also vary in length on deviation towers (Fig 17) and additional cross arms can also be incorporated into the design (Fig 13).
- The insulators. These are used to attach the conductors to the pylon, preventing electrical discharge to the steel structure. Insulators for high-voltage power transmission are made from glass, porcelain or a composite polymer. Glass insulators are becoming less common as some manufacturers ceased production in the late 1960s, switching to ceramic and composite materials (Fig 18).

- The dampers. These are metal devices fixed to insulators to avoid conductor damage in windy conditions, when vibration can occur.
- The spacers. These are metal devices which maintain separation of the conductors at intervals along the span between the pylons (Fig 19).
- The earth wire. This is strung between the tops of the pylons and is used for lighting and system protection and may be used to carry telecommunication signals.

On occasion, access to transmission towers is required to inspect, maintain and refurbish overhead lines; they can be inspected by helicopter, or by climbing the towers; bolts project from the corners of each tower; these are used by securely harnessed members of the maintenance team as a ladder (Fig 20).

The sealing end compound, the area surrounding a terminal tower, where an overhead line converts to an underground cable, has to be kept clear of vegetation. On the EDFE low voltage power line, this activity is carried out by an external contractor, who keeps a log of work carried out fixed to the exterior of the palisade fence of terminal tower EDFE114 (PKD11) (Fig 21).

4.2 Electricity substations

Substations are used for the efficient operation of the transmission system, specifically to switch circuits or transform voltage, usually decreasing it for distribution to homes and businesses.

The word *substation* dates to the period before the National Grid; the first substations were connected to only one power station, and acted as the subsidiary of that power station. They are normally situated between power stations and the transmission network, and between the transmission network and the distribution companies' networks. Substations can be up to 20 hectares in size, as they can include connecting terminal pylons, and were often built in the 1950s and 60s, when the electricity distribution network was expanded following nationalisation. Advances in technology mean that the equipment located at substations is now more compact, however (National Grid 2001, 6). A substation contains one or more transformers (Fig 22), which either step-up the voltage while decreasing the current, or step-down the voltage while increasing the current for domestic and commercial distribution. Switching, protection and control equipment ensure that the substation works safely (Fig 23).

The Hackney and West Ham substations both serve as transmission and distribution substations. A transmission substation connects various transmission lines with the same voltage, and contains high-voltage switches that allow lines to be connected together or isolated for maintenance. The main function of a distribution substation is to transfer power from the transmission system to the distribution system of an area. It is uneconomical to directly connect electricity consumers to the main transmission network, so the distribution station reduces voltage to a value suitable for connection to local loads. The distribution substation also isolates faults in either the transmission or distribution systems. Large electricity consumers are often connected directly to the main

transmission network; a diversion was created from the National Grid overhead power line to serve the Jubilee Line extension in 1996–7 (Brian Mead, pers comm.).

Substations are usually contained within a steel palisade or substantial brick or concrete wall to ensure public safety (Fig 24). In urban areas they often occupy special-purpose buildings constructed to reduce the noise from the transformers or mitigate against a negative aesthetic appearance; however, most of the equipment at West Ham and Hackney substations appears to be housed outside. They have road access, necessary for staff and the transport of equipment during construction, maintenance and repair (National Grid 2001, 6). Since the 1980s, the National Grid Company plc has formulated a series of guidelines relating to the siting and appearance of electricity substations, the Horlock Rules (Baptist 2003, 111-4); these are contained in Appendix Two.

4.3 Description of the built heritage resource

The first phase of development of the overhead power lines in the Lower Lea Valley belongs to the 1950s, when the Brimsdown to Brunswick Wharf line was installed, *c* 1953, as part of the expansion of the supergrid of 275kV power lines. The line was constructed using L1-type pylons, which were introduced specifically for the purpose of expanding the National Grid. Nationally, there are few examples left, mainly concentrated in Cumbria and Northumberland (McAuley nd, www.gorge.org). There appear to be no examples of this type of transmission tower remaining in the Lower Lea Valley, as the infrastructure was renewed when the second phase of electricity distribution was introduced.

In 1971, part of the recently closed Millfields power station was retained for use as an electricity substation. The Brimsdown to Brunswick Wharf high voltage power line was also diverted in order that it could use the new Hackney transmission substation, which would enable sections of the line to be isolated. Hackney would also serve as a distribution substation, transferring power from the high voltage distribution lines of the Central Electricity Generating Board to the London Electricity Board's local distribution network. One part of this network was a 132kV diversion line, which takes the form of a subsurface cable, which is carried over the River Lea by a contained steel bridge (Fig 25), before surfacing in a sealing end compound in the north-west corner of Hackney Marsh (Fig 26).

The 275kV overhead power lines are carried on 27 pylons, including two terminal towers, eighteen suspension towers and seven deviation towers. All of the transmission towers were renewed in or after 1971 when the overhead power line was diverted to serve Hackney substation. Some of the transmission towers from the former Brimsdown to Brunswick Wharf line may have been utilised in the new line, as some of the towers in place today share the same footprint as those erected in the 1950s (Fig 4-Fig 6), but have been renewed during the last 36 years.

The 132kV double circuit overhead power line, or diversion, is carried on 25 pylons, including four terminal towers, 11 suspension towers and 10 deviation towers. As is the case with the 275kV line, some of the transmission towers from the former Brimsdown to Brunswick Wharf line of 1953 may have been utilised in the new diversion line, as some

of the towers in place today share the same footprint as those erected in the 1950s, but have been replaced by structures which were perhaps better suited to a lower voltage local distribution network. A list of all of the transmission towers and their characteristics is given in Appendix 3.

4.4 Relationship with adjacent Built Heritage Resources

Transmission towers are not placed arbitrarily in the landscape; Lord Holford, adviser to the Central Electricity Generating Board, produced a set of guidelines for the routeing of overhead power lines. The Holford Rules, devised in 1959 and still used by the CEGB's commercial successor, National Grid, can be found in Appendix 1.

Broadly summarised, The Holford Rules seek to balance the financial advantages of erecting an overhead power line, as opposed to undergrounding, with the amenity, aesthetic or scientific value of the route of the line. The most direct line is often the most economical, but urban areas should be approached through industrial zones, and areas of high amenity value should be avoided altogether; therefore the National Grid and EDF lines skirt the edge of Hackney Marsh rather than crossing it, and completely avoid the centre of Stratford, being diverted to follow a route along the City Mill River and the Northern Outfall Sewer. On flat and sparsely planted land, overhead power lines should be kept separate from converging routes, distribution lines and other masts, cables and lines so as to avoid a concatenation, or wirescape. In practice, this was not achieved in the Lower Lea Valley; the National Grid and EDF lines follow a broadly similar course, possibly to limit their impact on the surrounding landscape, and when encountered with the overhead lines of the railway lines on the approach to Stratford Railway Station, result in a number of wirescapes.

The two overhead transmission lines and their associated towers form a prominent landscape feature, and as such they affect the views, character and setting of other Built Heritage Resources in the Lower Lea Valley. The substantial length of the overhead transmission lines, which stretch across an area measuring 5km from north to south and 3km from west to east, means that they affect the setting of a large range of Built Heritage Resources. The importance of the surrounding Built Heritage Resources and their relationship with the overhead transmission lines is discussed below.

Hackney Substation is situated in part of the former Millfields Power Station, situated in the Lea Bridge area of Hackney. It is surrounded by parkland on its west, north and east sides, with the Lea Navigation acting as its eastern boundary. To the south of the substation lies a housing estate, the setting of which is dominated by the two National Grid terminal pylons (Fig 27, Fig 28). The housing development in Denton Way has been designed in such a way that views of the towers from the houses are kept to a minimum, by orientating the development blocks so that the majority of the development does not front the transmission towers. The visual impact of the transmission towers from the streets and gardens cannot be reduced significantly, however, due to the proximity of the substation.

Three overhead power lines cross the northern side of Hackney Marsh; the resulting wirescape is partially screened by tree cover, reducing the visual impact of the

transmission towers on the marshes (Fig 29, Fig 30). Some of the transmission towers are positioned in highly accessible places; as a consequence the sealing end compound of terminal tower YYJ002 is heavily fenced and brambles have been allowed to grow in the interior of the compound, in order to deter trespassers. Another transmission tower has recently been put to a more inventive use; suspension tower VC017, part of an overhead power line which runs from Hackney substation to Brimsdown, has been used in the film *The Games*, directed by Hilary Powell. The base of the transmission tower was adapted for use as a boxing ring, which featured in the 15-minute film, which 'constructs a surreal document of a changing city through an alternative Olympics staged on the wasteland of the 2012 Olympic sites' (Powell 2007, 4). A 30cm-wide trench was dug around the transmission tower (Hilary Powell, pers comm.) to mark out the ring (Fig 31, Fig 32).

Transmission towers YYJ005-9 and EDFE097-100 take a route along an industrial corridor, situated on either side of a railway line and a Channel Tunnel rail depot, significantly reducing any visual impact for the residents of Leyton. Transmission towers EDFE099 and 100 are situated in the grounds of New Spitalfields Market, where they are prominent features (Fig 33). No efforts have been made to disguise their presence; EDFE099 is situated in the lorry park, and has a low crash barrier surrounding the tower to prevent vehicles from parking beneath it and EDFE100 is incorporated into a compound used for the storage of propane and timber shipping pallets (Fig 34). The area on the north-east side of Hackney Marsh has a mixed use, having grown up around the former Temple Mills Marshalling Yard. There are a number of light industrial units and open areas used as depots (Fig 35) although there are some sports grounds and allotment gardens in this area (Fig 36). Residential areas are concentrated to the east of the industrial parks and depots in Oliver Road, Leyton, reducing the visual impact of the overhead transmission lines.

The area south of Temple Mills Lane also has a mixed use; residential use is concentrated around Clays Lane, where a housing cooperative, a former Halls of Residence for the University of East London and an accommodation site for the Traveller community are located (Fig 37). Deviation transmission tower EDFE104 is situated within the Travellers' site, which was established in 1971 for the English Romany community and includes blocks with kitchen and bathroom facilities (Taylor 2006); National Grid 'prefers that built development does not take place beneath lines' (National Grid 2003, 42) but development close to, or under overhead lines cannot be prevented, although safe electrical clearances must be maintained (National Grid 2001, 11). The inward-looking nature of the buildings at the Clays Lane Housing Cooperative would have significantly reduced the visual impact of the transmission towers for the residents, as would the design of the surrounding landscape, for example the structural landscaping of the Eastway Cycle Circuit and the provision of small areas of woodland in the area (Fig 38).

Aside from the Clays Lane development, the established use for this area is one of industry; the National Grid and EDFE overhead power lines pass either side of the Celsius First cold storage facility. The EDFE transmission towers have been placed on the sloping earth bank on the north-west side of the works; here they do not encroach on the buildings or the movement of vehicles around the site, which was formerly the site of Stratford Marsh. Tower YYJ013 (Fig 39, Fig 40) is positioned in the car park on the south-west side of the cold storage facility, and like the transmission towers at New

Spitalfields Market, was incorporated into the site; it had served as the entrance gate to the car park, with vehicles passing between the legs (Paul Turner, pers comm.).

The National Grid and EDFE overhead power lines continue in an industrial corridor, broadly following the course of the Northern Outfall Sewer. Where the overhead power lines cross the Great Eastern Railway line approaching Stratford Station, another wirescape is encountered (Fig 41). The area south of Carpenter's Road is overwhelmingly industrial in character, with one exception. The Northern Outfall Sewer has been utilised as a foot and cycle path, branded the 'Greenway', and is used by a large and varied community each day. The visual impact of the transmission towers for people walking along the length of the Greenway may not have been a consideration when they were erected in 1971, but they are a prominent landscape feature for anyone using the path, for example, in the Marshgate Lane Area (Fig 42–Fig 44).

Given the prominence of the transmission towers when accessing the Greenway, for example from Stratford High Street (Fig 45, Fig 46), it is perhaps a surprise that they do not feature as landmarks on the maps and information boards along the route (Fig 47). As the Greenway is used by a large number of people each day, it has become a focus for work by local artists, such as a sundial, designed by local artist Kate Williams, which marks the point where the Greenwich meridian crosses the Greenway (Fig 48) or *The Snail*, part of a redundant turbine from Abbey Mills Pumping Station, which now serves as a piece of public art (Fig 50). The waterways of the Lower Lea Valley are also extensively used by leisure craft, walkers and cyclists, and the transmission towers have a visual impact on the landscape experienced by these users (Fig 51).

The Abbey Lane housing estate interrupts the course of the EDFE overhead power line; 'to minimise disturbance and to facilitate easy maintenance, National Grid prefers that built development does not take place beneath lines' (National Grid 2003, 42) and the line has been diverted underground, beneath Abbey Lane. The transmission towers of the National Grid still have a significant visual impact on the estate, however (Fig 52) and where new housing has been constructed, some efforts have been made to orientate the buildings so that a relatively small number of homes are visually affected by tower YYJ020 (Fig 53). Unfortunately, the area of land surrounding a pylon, not built on for reasons of safety, can become a magnet for illegal activity, such as fly tipping (Fig 54).

Abbey Mills Pumping Station, and some of the transmission towers in its locale are situated within the Three Mills Conservation Area, an issue which is explored in greater detail in the next part of the report, but the appearance of the grade II* Listed Pumping Station and the grade II Listed Ancillary Pump House, Stores Building, the bases of the former chimney stacks, offices and gate lodge are affected by the presence of the transmission towers, especially when viewing the site from the Northern Outfall Sewer (Fig 55) or from the west (Fig 56).

The course that the overhead transmission lines take through the Lower Lea Valley is broadly restricted to industrial areas, satisfying the requirements of the Holford Rules, but the visual impact of the transmission towers is no less in West Ham than it would be in a residential area. It can be easier to incorporate them into an industrial area, however, which appears to have been successfully achieved on the approach to West Ham substation with the naming of the Pylon Trading Estate (Fig 57) and the incorporation of

a pylon into a car park in Cody Road (Fig 58), something not recommended by the National Grid and against their guidelines for utilising land close to overhead power lines (National Grid 2003, 42-4).

4.5 Discussion

The electricity transmission towers have played a major role in the development of the urban landscape in the Lower Lea Valley over the last 50 years. The first overhead powerline, that between Brimsdown power station and Brunswick Wharf, constructed *c*1953, predated the Holford Rules by six years, but anticipated their guidelines by taking a course which avoided areas of high amenity value, such as Hackney Marshes and the centre of Stratford, and following a course that was situated in a predominantly industrial corridor, located adjacent to railway lines and the Northern Outfall sewer. The construction in 1971 of the 275kV overhead powerline connecting Barking power station with Hackney sub station, and the 132kV deviation, which followed a similar route, were broadly carried out in accordance with the Holford Rules, with the construction of a major deviation to ensure the lines did not cross Hackney Marshes.

Subsequent planning guidelines published by the National Grid (2001 & 2003) have recommended uses for land under and around overhead powerlines, with a preference for no built development beneath lines, although various land uses can be accommodated, such as public open spaces, parking (although not underneath a transmission tower), roads and non-residential storage uses, subject to observance of safe working procedures and statutory safety clearances (National Grid 2003, 42-4, 92). As a result of these guidelines, the majority of the areas under and around overhead powerlines in the Lower Lea Valley have remained in industrial use, with some areas of open waste ground not developed for commercial or recreational use.

Many of the residential areas adjacent to the overhead powerlines have been designed in order to minimise the visual impact that the transmission towers might have; for example, the housing cooperative in Clays Lane was constructed as an inward-looking community, with views out over the Eastway Cycle Circuit and adjacent woodland. The alignment of the houses in Denton Way is such that the views from homes of the transmission towers at Hackney sub station are kept to a minimum. A notable exception to this concern for minimising the visual impact of transmission towers is the Travellers' site in Clays Lane, which is situated beneath transmission tower EDFE104; both structures date to 1971, although it is not known which was constructed first.

The design guidelines for the situation of overhead powerlines in the landscape, and those for subsequent development around them, have resulted in a linear feature that snakes its way across the landscape, reflecting existing topographical and landscape features and instituting new ones. The effect that the insertion of linear features such as roads and railways has on the functioning of a landscape and the people who populate it has been researched by several authors. David Reeder (Hyde & Reeder 1984) has pointed out Booth's 1889 map of poverty provides information on how the spatial forms of London in the 19th century had an impact on the location of economically poor areas. He notes that the map 'points to the significance especially of the innumerable dead ends, closed up vistas and backwaters in the layout of streets… a more careful reading indicates how

some new addition to the ground plan – a dock or canal, for example, a gas works or waterworks, a railway line, or just the alignment of a new street – seems to have served to reinforce slum tendencies. Booth and his team were repeatedly to draw attention in later volumes to the importance of physical barriers' (cited in Vaughan 2005, 6-7).

Sefryn Penrose (forthcoming) has analysed the contemporary landscape beneath and surrounding Junction 3 of the M32 flyover in Bristol, which bisected the suburbs of St Pauls and Easton, which lie to the north of the city centre. 'Our experience of the city is dependent on its layout, and more and more often in the contemporary urban setting, severe alterations have been enacted on this landscape which in turn alter our experiences', indeed the altered landscape is 'not passive and reflective but can act back upon us in different ways' (Buchli & Lucas 2001, 5). The motorway flyover and the pedestrian subway beneath it 'fulfil a function for users of the motorway in its routing of traffic from the motorway onto city roads, but for pedestrians, local residents who wish to move between St Pauls and Easton, it is a problem to be negotiated' (Penrose, forthcoming).

5 The interest and significance of the built heritage

5.1 Assessment by Listed Building criteria

The electricity transmission towers and their associated substations and other structures within the Lower Lea Valley are not statutorily listed. English Heritage, the organisation responsible for administering the listing process, has published a series of documents outlining the principles of selection for designating buildings; two of these volumes deal with utilities and communications (EH 2007a) and industrial buildings (EH 2007b).

When considering whether a structure related to the utilities is eligible for listing or other statutory protection, it first has to be assessed in terms of its intrinsic value – this may lie in its special architectural, planning, engineering and technological interest. The completeness of a structure or complex can be of overriding importance, especially where important processes can be illustrated on a single site, although this could be difficult in the example of an overhead power line, where the various processes involved in the dissemination of electricity are, by necessity, spread over a wide area. The relative date and rarity of a structure may also be significant. Alteration and upgrading of structures is likely to have taken place, and assessment of the authenticity of the structures from a historical point of view will sometimes be necessary. The designation of buildings and structures concentrates on the above-ground evidence of the systems. Below-ground remains and infrastructure, although they are important to the overall understanding of utilities, will generally not be designated; exceptionally, there may be grounds for scheduling (EH 2007a, 2).

The special considerations when selecting industrial buildings for designation should also apply to utilities buildings and infrastructure, as they fulfilled an industrial purpose (EH 2007b). The eight key issues which should be addressed when considering industrial structures for designation, and their applicability to the built heritage of the overhead power lines in the Lower Lea Valley are outlined below.

- **The Wider Industrial Context:** industrial structures should be considered within their wider setting. All of the components of an industrial complex play their part, and each building or structure needs to be seen within this broader context. The overhead power lines and associated substations are part of a nation-wide network for the distribution of electricity; as such, each transmission tower and related structure has to be understood within a wider industrial context which takes in the generation and use of electricity.
- **Regional Factors:** a regional perspective needs to be taken when assessing buildings and sites, in order to achieve a representative sample, and to identify regional specialisms. Overhead power lines are a ubiquitous feature in the United Kingdom; they are more common in rural areas, where it is more economically prudent to distribute electricity above ground, but there are many kilometres of overhead power lines in urban areas.

- **Integrated Sites:** the issue of completeness is important when considering a structure which was used in a process involving numerous components. As the transmission towers and related structures are still serving their intended purpose, the infrastructure is complete and has been understood as part of the programme of built heritage assessment and recording.
- **Architecture and Process:** an industrial structure should normally reflect in its design (plan, form and appearance) the specific function it was intended to fulfil. Transmission towers and substations are designed to fulfil a single purpose, which is reflected in their architecture. It is possible for some changes of use to be made, for example converting a transmission tower from carrying 275kV conductors to 132kV conductors.
- **Machinery:** the special interest of some sites lies in the machinery. Generally speaking, where it is the machinery that makes a building special, its loss will reduce the eligibility for listing, or other protective status. Transmission towers have a high visual impact, and in the 1930s the landscape architect Sir Reginald Blomfield, the designer of the precursor of the modern pylon, was retained to advise on the siting of overhead lines (Hannah 1979, 118). Transmission towers could be said to have a sculptural quality, even when stripped of their conductors, however, many substations, which were constructed in the 1950s during the expansion of the National Grid, are simple steel framed buildings, with an external brick skin or lightweight cladding; the interest lies in the machinery and processes which go on inside them, which are often updated on a regular basis.
- **Technological Innovation:** significance can lie in the use of the structure, perhaps as an early example of an important process, or in the structure itself, such as its use of materials. The pylons and related structures date to a period of renewal and extension of the electricity transmission system, in 1971, and as such are examples of structure found in widespread use across the country.
- **Historic Interest:** where physical evidence of important elements of industrial history survives, designation could be considered. The transmission towers and other electrical structures in the Lower Lea Valley are of common types, which were already in widespread use in 1971, and are still common features of urban and rural landscapes today.
- **Rebuilding and Repair:** a high level of reconstruction can be the basis for a decision not to designate a structure. During the lifetime of the electricity transmission network, replacements will have been made to the conductors and insulators, and possibly the structure of the transmission towers themselves, as they were damaged by weather, vandalism, or accident.

'Early utilities will almost always be eligible for designation… They will need to be assessed within their historical context, and due consideration given to specialist claims to significance. Architectural quality will almost invariably be a key consideration… electricity pylons are dominant landscape features… their claims to special interest can be debated. However, they would not be considered listable except in exceptional circumstances' (EH 2007a, 7-10).

Exceptional circumstances might include a claim to being unique, or an early technological survivor; however the transmission towers and their related structures in the Lower Lea Valley can make no such claim.

5.2 Assessment by conservation area criteria

Four of the electricity transmission towers are located within the Three Mills Conservation Area, designated by the London Borough of Newham in November 1971. It is designated under the provisions of Section 69 of the Planning (Listed Buildings and Conservation Areas) Act 1990, and a conservation area is defined as 'an area of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance' (London Borough of Newham 2006, 1).

The transmission towers located within the Three Mills Conservation Area are YYJ019 and YYJ021, on the National Grid 275kV overhead power line and EDFE114 and its associated sealing end compound, and EDFE115, on the EDFE 132kV deviation overhead power line. The other transmission towers are all located near one other conservation area and five areas of interest:

- Fairfield Road Conservation Area
- Dace Road Area of Interest
- Fairfield Road Area of Interest
- Marshgate Lane Area of Interest
- St John's Area of Interest
- Sugar House Lane Area of Interest

The Three Mills Conservation Area Character Appraisal identifies terminal tower EDFE114 and its sealing end compound as a negative structure (Fig 59) which impinges on the views of the area. The transmission towers can be considered in relation to the published conditions under which unlisted buildings are held to make a positive (or otherwise) contribution to the special architectural or historic interest of a conservation area (EH 2005b, appendix 2):

'Is the building the work of a particular architect of regional or local note?'

The electricity transmission towers erected in the 1930s were designed by Sir Reginald Blomfield, an eminent architect who was responsible for the remodelling of Regent's Street in the 1920s (Flemming et al, 1999, 57). Later transmission towers have evolved from his original designs, and from the 1980s, computer aided design packages have been used in order to find the optimum strength for a given weight of material.

'Has it qualities of age, style, materials or any other characteristics which reflect those of at least a substantial number of other buildings in the conservation area?'

'Does it relate by age, materials or in any other historically significant way to adjacent listed buildings, and contribute positively to their setting?'

The electricity transmission towers were designed to fulfil a specific function, which dictated their form and the materials which could be used in their construction. Steel and concrete are commonly used in industrial buildings in the surrounding area, but as structural elements, and are not necessarily left exposed. Most other buildings are constructed of brick or concrete, with steel frames used on larger industrial buildings. The listed buildings contained within the Three Mills Conservation Area comprise two main groups; the Three Mills complex and the Abbey Mills Pumping Station and related buildings. Several late 20th century buildings are also located within the conservation

area; a housing development, 'Island House' and Abbey Mills Pumping Station F; however these buildings have been designed to complement the existing built heritage.

'Does it, individually or as part of a group, serve as a reminder of the gradual development of the settlement in which it now stands, or an earlier phase of growth?'

'Does it have significant historic association with established features such as the road layout, burgage plots, a town park or a landscape feature?'

'Does it reflect the traditional functional character of, or former uses within, the area?'

The erection of electricity transmission towers across the Lower Lea Valley in the 1950s was related to the expansion of London and the increased need for, and use of, electricity. The pylons in the conservation area were erected in 1971, shortly before the area's designation. Pylons are constructed in locations that reflect the local topography; they are not usually erected on the tops of hills, for example, as they will appear to be more prominent when viewed against the skyline.

'Does the building have landmark quality, or contribute to the quality of recognisable spaces, including exteriors or open spaces within a complex of public buildings?'

'Has it significant historic associations with local people or past events?'

'Does its use contribute to the character or appearance of the conservation area?'

The transmission towers are certainly prominent landmarks, but they contribute negatively to the appearance of the conservation area, as highlighted by the Three Mills Conservation Area character appraisal (Fig 59). Transmission towers identical to those in the conservation area can be found across the United Kingdom, in both urban and rural contexts.

5.3 Conclusion

This assessment concludes on balance that the structures associated with the transmission and distribution of electricity in the Lower Lea Valley are an integral part of the current landscape, of regional technological and historic interest, and they form a prominent landscape feature.

The structures are not eligible for statutory protection, and pylons YYJ019 and YYJ021, on the National Grid 275kV overhead power line and EDFE114, its associated sealing end compound, and EDFE115, on the EDFE 132kV line, do not justify their inclusion in the Three Mills Conservation Area, however; EDFE114 in particular has been highlighted by the Character Appraisal and Management Proposals as a negative structure, which does not make a positive contribution to the character of its surroundings (Fig 59).

6 Conclusions, recommendations and publication

This assessment is intended to provide the Local Authority and their designated adviser with information to enable them to make an informed decision as to the most appropriate mitigation strategy that may be required.

As the description (above) indicates, the transmission towers, sealing end compounds and substations of the EDFE and National Grid overhead transmission lines originate from the installation of both power lines in 1971. Some towers occupy the footprints of earlier installations from the Brimsdown to Brunswick Wharf overhead transmission line, which was constructed in 1953, and was partly replaced by the 275kV line from West Ham to Hackney substation. Subsequent alterations have been made to both overhead transmission lines, with a diversion for local supply from transmission tower EDFE113 to Bow substation added after its construction, and a diversion from the National Grid 275kV transmission line in 1996-7 to provide power for the Jubilee Line extension.

Transmission towers are constantly maintained, with regular upgrading and repair of materials; conductors can be damaged, as can glass and ceramic insulators, which are increasingly replaced with new synthetic polymers. Most transmission towers are protected with barbed wire, usually erected around the body of the tower, or around the legs, to prevent members of the public from climbing or damaging them, however they can be damaged in other ways; some transmission towers were located in car parks or industrial compounds, and the space underneath them used for storage of materials or vehicles, increasing the likelihood of them being damaged. The transforming equipment at Hackney and West Ham substations is also vulnerable to vandalism, and is updated as technology improves. As such, it is likely that little of the electricity distribution equipment, aside from the transmission towers, dates to 1971.

The transmission towers and associated equipment are also of a standard type, none of the transmission and distribution equipment are unique or rare, and can be found on other overhead transmission lines across the country.

They do not merit listing, or any other statutory protection. They do, however, form a prominent landscape feature, and their relationship with the other Built Heritage Resources in the Lower Lea Valley, outlined above, is unique.

The transmission towers have been highlighted as having a negative visual impact on their surroundings, especially in the Three Mills Conservation Area; their removal will be of significant visual benefit. Prior to their removal a programme of archival research has been undertaken, the results of which are included in this report.

Available resources have been used to date the sequence of development of the overhead transmission lines, although there have been some limitations. The records of the London Electricity Board, which undertook distribution and local supply of electricity from 1947 to 1990 are housed at the London Metropolitan Archive, yet most records are closed to public access for a period of 50 years. A series of site visits has been undertaken, resulting in the comprehensive photography of the transmission towers, substations, associated equipment and their setting in the landscape. Access was not always available

to some parts of the infrastructure; the substations in particular are housed in secure compounds and could not be photographed or inspected in detail.

This assessment concludes that the transmission towers and related structures in the Lower Lea Valley do not merit any statutory protection; indeed, their removal will be welcomed by the local community. A photographic survey, *already carried out to current English Heritage guidelines* (EH 2006, 14) *as part of the assessment process,* is the most appropriate recording strategy for the overhead transmission lines, the associated infrastructure, and their setting within the landscape.

This survey provides a full visual record accompanied by a written account, and is appropriate for a building of a well-known type for which existing documentation is in other respects adequate.

A summary of the results of this assessment and survey will be published in the annual round-up of fieldwork in *London Archaeologist*, and will be repeated in the relevant period journal, *Post-Medieval Archaeology*. A note about the project could also be published in *Bulletin*, the newsletter of the International Committee for the Conservation of Industrial Heritage (TICCIH) and an article in *Industrial Archaeology Review*, the journal of the Association for Industrial Archaeology.

Information on the results of the survey will be made publicly available by means of a database in digital form, to permit inclusion of the data in any future academic researches into the development of London, such as an update of the *Survey of London*, or specialist studies of the electric power industry.

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9 Copyright

10 Appendix 1: The Holford Rules - guidelines for the routeing of new high voltage overhead transmission lines (1959)

- Avoid altogether, if possible, the major areas of highest amenity value, by so planning the general route of the line in the first place, even if the total mileage is somewhat increased in consequence.

- Avoid smaller areas of high amenity value or scientific interest, by deviation; provided that this can be done without using too many angle towers (i.e. the more massive structures which are used when lines change direction).

- Other things being equal, choose the most direct line, with no sharp changes of direction and thus fewer angle towers.

- Choose tree and hill backgrounds in preference to sky background wherever possible and when the line has to cross a ridge, secure this opaque background as long as possible and cross obliquely when a dip in the ridge provides an opportunity. Where it does not, cross directly, preferably between belts of trees.

- Prefer moderately open valleys with woods, where the apparent height of the towers will be reduced and views of the line will be broken by trees.

- In country which is flat and sparsely populated, keep the higher voltage lines as far as possible independent of smaller lines, converging routes, distribution lines and other masts, wires and cables so as to avoid a concatenation or 'wirescape'.

- Approach urban areas through industrial zones where they exist and where pleasant residential and recreational land intervenes between the approach line and substation, go carefully into the costs of undergrounding, for lines other than those of the highest voltage.

11 Appendix 2: The Horlock Rules: Guidelines on substation siting and design

- In the development of system options including new substations, consideration must be given to environmental issues from the earliest stage to balance the technical benefits and capital cost requirements for new developments against the consequential environmental effects in order to keep adverse effects to a reasonably practicable minimum.

- The siting of new NGC [National Grid Company plc] substations, sealing end compounds and line entries should as far as reasonably practicable seek to avoid altogether internationally and nationally designated areas of the highest amenity, cultural or scientific value by the overall planning of the system connections.

- Areas of local amenity value, important existing habitats and landscape features including ancient woodland, historic hedgerows, surface and ground water sources and nature conservation areas should be protected as far as reasonably practicable.

- The siting of substations, extensions and associated proposals should take advantage of the screening provided by land form and existing features and the potential use of site layout and levels to keep intrusion into the surrounding areas to a reasonably practicable minimum.

- The proposals should keep the visual, noise and other environmental effects to a reasonably practicable minimum.

- The land use effects of the proposal should be considered when planning the siting of substations or extensions.

- In the design of new substations or line entries, early consideration should be given to the options available for terminal towers, equipment, buildings and ancillary development appropriate to individual locations, seeking to keep effects to a reasonably practicable minimum.

- Space should be used effectively to limit the area required for development consistent with appropriate mitigation measures and to minimise the adverse effects on existing land use and rights of way, whilst also having regard to future extension of the substation.

- The design of access roads, perimeter fencing, earthshaping, planting and ancillary development should form an integral part of the site layout and design to fit in with the surroundings.

- In open landscape especially, high voltage line entries should be kept, as far as possible, visually separate from low voltage lines and other overhead lines so as to avoid a confusing appearance.

- The inter-relationship between towers and substation structures and background and foreground features should be studied to reduce the prominence of structures from main viewpoints. Where practicable the exposure of terminal towers on prominent ridges should be minimised by siting towers against a backdrop of trees rather than open skylines.

12 Appendix 3: Built Heritage baseline

Transmission Tower ID number	Date	Notes
YYJ001	1971	L6 Terminal tower. Located within large sealing end compound at substation in Denton Way, Hackney, shared with terminal tower YC018. 400/274kV Barking Power station to Hackney substation.
YYJ002	1971	L6 Suspension tower with quad conductor bundles.
YYJ003	1971	L6 Suspension tower with quad conductor bundles.
YYJ004	1971	L6 Suspension tower with quad conductor bundles.
YYJ005	1971	L6 D30 Deviation tower.
YYJ006	1971 replacement on 1953 foot print	L6 Suspension tower. Shares footprint of 1953 suspension tower of the Brunswick Wharf to Brimsdown line, shown on OS 1:10,500 mapping from 1968.
YYJ007	1971 replacement on 1953 foot print	L6 Suspension tower. Shares footprint of 1953 suspension tower of the Brunswick Wharf to Brimsdown line, shown on OS 1:10,500 mapping from 1968. As the tower is situated on a slight bend in the line, a pair of ceramic insulators is used to suspend each conductor, rather than the usual one.
YYJ008	1971	L6 Suspension tower with quad conductor bundles
YYJ009	1971 replacement on 1953 foot print	L6 Suspension tower. Shares footprint of 1953 suspension tower of the Brunswick Wharf to Brimsdown line, shown on OS 1:10,500 mapping from 1968. As the tower is situated on a slight bend in the line, a pair of ceramic insulators is used to suspend each conductor, rather than the usual one.
YYJ010	1971	L6 Suspension tower. As the tower is situated on a slight bend in the line, a pair of ceramic insulators is used to suspend each conductor, rather than the usual one.
YYJ011	1971 replacement on 1953 foot print	L6 D30 Deviation tower. Shares footprint of 1953 deviation tower of the Brunswick Wharf to Brimsdown line, shown on OS 1:10,500 mapping from 1968.
YYJ012	1971 replacement on 1953 foot print	L6 Suspension tower. Shares footprint of 1953 deviation tower of the Brunswick Wharf to Brimsdown line, shown on OS 1:10,500 mapping from 1968. As the tower is situated on a slight bend in the line, a pair of ceramic insulators is used to suspend each conductor, rather than the usual one.
YYJ013	1971	L6 Suspension tower. As the tower is situated on a slight bend in the line, a pair of ceramic insulators is used to suspend each conductor, rather than the usual one. The base of the suspension tower was formerly used as the entrance gate to the lorry park at Celsius First Ltd cold storage facility, with vehicles passing between the legs, although this practice ceased in the 1990s (Paul Turner, pers comm.)
YYJ014	1971	L6 D30 Deviation tower.
YYJ015	1971	L6 D60 Deviation tower
YYJ016	1971 replacement on 1953 foot print	L6 Suspension tower. Shares footprint of 1953 deviation tower of the Brunswick Wharf to Brimsdown line, shown on OS 1:10,500 mapping from 1968. As the tower is situated on a slight bend in the line, a pair of ceramic insulators is used to suspend each

		conductor, rather than the usual one.
YYJ017	1971 replacement on 1953 foot print	L6 Suspension tower. Shares footprint of 1953 deviation tower of the Brunswick Wharf to Brimsdown line, shown on OS 1:10,500 mapping from 1968. As the tower is situated on a slight bend in the line, a pair of ceramic insulators is used to suspend each conductor, rather than the usual one.
YYJ018	1971	L6 Suspension tower. As the tower is situated on a slight bend in the line, a pair of ceramic insulators is used to suspend each conductor, rather than the usual one.
YYJ019	1971 replacement on 1953 foot print	L6 Suspension tower. Shares footprint of 1953 deviation tower of the Brunswick Wharf to Brimsdown line, shown on OS 1:10,500 mapping from 1968. As the tower is situated on a slight bend in the line, a pair of ceramic insulators is used to suspend each conductor, rather than the usual one. A double circuit of barbed wire, one around each leg and the main body of the tower, prevents children from the adjacent playground from climbing up.
YYJ020	1971	L6 Suspension tower. Shares footprint of 1953 deviation tower of the Brunswick Wharf to Brimsdown line, shown on OS 1:10,500 mapping from 1968. As the tower is situated on a slight bend in the line, a pair of ceramic insulators is used to suspend each conductor, rather than the usual one.
YYJ021	1971	L6 Suspension tower. As the tower is situated on a slight bend in the line, a pair of ceramic insulators is used to suspend each conductor, rather than the usual one. A single line appears to divert from this transmission tower, is fixed to structural steelwork of the tower, and heads underground, although no significant structural changes have been made to accommodate this.
YYJ022	1971	L6 D60 Deviation tower
YYJ023	1971	L6 Suspension tower
YYJ024	1971	L6 Suspension tower
YYJ025	1971	L6 D30 Deviation tower with projecting third cross arm modification to south facing side for line to be diverted downwards to electricity sub station. Situated within secure compound on west side of Bidder Street, West Ham.
YYJ026	1971	L6 Terminal tower. Located within large sealing end compound.
EDFE095 (PKD29)	1971	L6 Terminal tower. Located within large sealing end compound at north-west corner of Hackney Marsh. Terminal end of 132kV deviation of the Barking to Hackney overhead power line. Connected with Hackney substation via buried cables.
EDFE096 (PKD28)	1971	L6 Suspension tower.
EDFE097 (PKD27)	1971	L6 D30 Deviation tower.
EDFE098 (PKD26)	1971	L6 Suspension tower
EDFE099 (PKD25)	1971	L6 Suspension tower. Situated in the lorry park of New Spitalfields market.
EDFE100 (PKD24)	1971	L6 Suspension tower. Situated adjacent to the service area at New Spitalfields market, used for the storage of propane, diesel and wooden pallets.
EDFE101 (PKD23)	1971 replacement on 1953 foot print	L6 Suspension tower. Shares footprint of 1953 deviation tower of the Brunswick Wharf to Brimsdown 275kV line, shown on the OS 1:10,500 mapping from 1968.
EDFE102 (PKD22)	1971	L6 Suspension tower
EDFE103 (PKD21)	1971	L6 Suspension tower
EDFE104 (PKD20)	1971	L6 D30 Deviation tower

EDFE105 (PKD19)	1971	PL16 Suspension tower
EDFE106 (PKD18)	1971	PL16 D30 Deviation tower
EDFE107 (PKD17)	1971 replacement on 1953 foot print	PL16 D30 Deviation tower
EDFE108 (PKD16)	1971	PL16 D60 Deviation tower
EDFE109 (PKD15)	1971	PL16 D60 Deviation tower
EDFE110 (PKD14a)	1971	PL16 Suspension tower with modified cross arms, enabling a diversion line down to a substation, which serves Stratford railway station.
EDFE111 (PKD14)	1971	PL16 D30 Deviation tower
EDFE112 (PKD13)	1971	PL16 Suspension tower
EDFE113 (PKD12)	1971 replacement on 1953 foot print	PL16 Terminal tower. On footprint of 1953 suspension tower, however the structure is not as tall or substantial as a 400/275kV transmission tower, suggesting that it is a later replacement. Essentially a modified suspension tower, this has extensions to the upper tier of cross arms to enable conductors to pass down to ground level. The concrete slabs covering the subterranean power line are visible adjacent to the sealing end compound, and the power line continues under Stratford High Street and the Abbey Lane estate. A deviation from this line heads south-west, below Stratford High Street, and serves Bow substation, in Pudding Mill Lane, which serves most of the Lea-side area (Tower Hamlets 2006, 37). Originally structure had six sets of insulators mounted on gantries, and boxed-in cables leading to ground. Structure painted green, then additional six insulators and cables installed. An extra diversion was created to serve the Jubilee Line extension in 1996-7; however this is believed to have been created from the National Grid power line, rather than that belonging to EDFE (Brian Mead, pers comm.). The additional cables may have been installed to serve the substation.
EDFE114 (PKD11)	1971 replacement on 1953 foot print	PL16 Terminal tower. On footprint of 1953 suspension tower, situated within a sealing end compound in the Three Mills Conservation Area. Six sets of insulators mounted on gantries, and boxed-in cables leading to ground.
EDFE115 (PKD10)	1971 replacement on 1953 foot print	PL16 Suspension tower
EDFE116 (PKD09)	1971 replacement on 1953 foot print	PL16 D30 Deviation tower
EDFE117 (PKD08)	1971 replacement on 1953 foot print	PL16 D10 Deviation tower
EDFE118 (PKD07)	1971	PL16 Suspension tower
EDFE119 (PKD06)	1971	PL16 Terminal tower

13 Appendix 4: List of Archaeological photographs

Date	Photo Number	Direction of shot	Tower Number on Map	Description & Notes	NG Ref: eastings	NG Ref: northings
19/03/2007	12007001-01	SE	YYJ001	Terminus of NGT lines YYJ & VC; the latter runs N from filter beds. Terminal towers slightly different in staging and top lines go to single gantry on 5 verticals above. Open air switch gear etc behind brick wall.		
19/03/2007	12007002-01	ESE	YYJ001	As 001, wide angle. River Lea behind trees on bank to left. Recreation ground on ex-marshes in the foreground.		
19/03/2007	12007003-01	ESE	YYJ001	As 001, wide angle. River Lea behind trees on bank to left. Recreation ground on ex-marshes in the foreground.		
19/03/2007	12007004-01	E	YYJ001	As 001. End on view. Hackney substation and notice for Carpenters Rd site (u/g project). Crane partly obscures R pylon.		
19/03/2007	12007005-01	E	YYJ001	As 001. End on view. Hackney substation and notice for Carpenters Rd site (u/g project). Crane partly obscures R pylon.		
19/03/2007	12007006-01	ENE	YYJ001	Square to & end on. '275000 volts'. W wall of Hackney substation with barbed wire.		
19/03/2007	12007007-01	NE	YYJ001	Over roofs of Paston Close housing estate		
19/03/2007	12007008-01	NE	YYJ001	Over roofs, children's playground in foreground.		
19/03/2007	12007009-01	NE	YYJ001	Over roofs, children's playground in foreground.		
19/03/2007	12007010-01	NE	YYJ001	Pylons visible over the roofs of Paston Close.		
19/03/2007	12007011-01	N	YYJ001	Warrington Close. S wall of Hackney substation. CCTV. Glass insulators on tower. Ceramic insulated.		
19/03/2007	12007012-01	N	YYJ001	Warrington Close. S wall of Hackney substation. CCTV. Glass insulators on tower. Ceramic insulated.		
19/03/2007	12007013-01	N	YYJ001	Warrington Close. S wall of Hackney substation. CCTV. Glass insulators on tower. Ceramic insulated.		
19/03/2007	12007014-01	NNW	YYJ001	Gantry side-on. NB horizontal buzz bar (?) under gantry.		
19/03/2007	12007015-01	NNW	YYJ001	Gantry side-on. NB horizontal buzz bar (?) under gantry.		
19/03/2007	12007016-01	N	YYJ001	tower detail		
19/03/2007	12007017-01	NW	YYJ001	E side of gantry. Six pairs of cables & six insulators		
19/03/2007	12007018-01	N	YYJ001	tower detail		

19/03/2007	12007019-01	N	YYJ001	tower detail		
19/03/2007	12007020-01	N	YYJ001	detail of top and middle cables on tower. Top cables staggered -- line meets arm half way along arm, while cable to gantry is from end of arm. Lower cables are at end of arms. Rings and lightning conductors differ from other towers.		
19/03/2007	12007021-01	N	YYJ001	detail of top and middle cables on tower. Top cables staggered -- line meets arm half way along arm, while cable to gantry is from end of arm. Lower cables are at end of arms. Rings and lightning conductors differ from other towers.		
19/03/2007	12007022-01	NNW	YYJ001	Millfields Waste Transfer Station' Relief course arched building with sky lights & 1 story offices in front. Opp. Pedro St.		
19/03/2007	12007023-01	N	YYJ002, EDFE095	River Lea in foreground, pair pylons nearer to left		
19/03/2007	12007024-01	N	YYJ002, EDFE095	3 towers, middle one is EDF terminal tower		
19/03/2007	12007025-01	N	YYJ002, EDFE095	As 024, wide shot to show next pylon to the E also		
19/03/2007	12007026-01	N	YYJ002, EDFE095	As 024, wide shot to show next pylon to the E also		
19/03/2007	12007027-01	NE	EDFE095	lower half of PKD30 and terminal end compound. and next tower to E		
19/03/2007	12007028-01	NE	EDFE095	As 027		
19/03/2007	12007029-01	NE	EDFE095	As 027		
19/03/2007	12077030-01	E	EDFE095	As 027 end on wide angle, W side		
19/03/2007	12007031-01	NE	YYJ003, EDFE095	betw NGT & EDFE lines from just NW of PKD30		
19/03/2007	12007032-01	W	YYJ002, EDFE095	EDFE1 to L, NGT to R to terminus		
19/03/2007	12007032-02	W	YYJ002, EDFE095	EDFE1 to L, NGT to R to terminus		
19/03/2007	12007032-03	W	YYJ002, EDFE095	EDFE1 to L, NGT to R to terminus		
19/03/2007	12007033-01	W	YYJ002, EDFE095	EDFE1 to L, NGT to R to terminus		
19/03/2007	12007034-01	W	YYJ002, EDFE095	EDFE1 to L, NGT to R to terminus		
19/03/2007	12007035-01	NW	EDFE095	lower stage & connection to u/gd cables		
19/03/2007	12007036-01	NW	EDFE095	As 35, detail S stage		
19/03/2007	12007037-01	NW	EDFE095	As 36, both stages		
19/03/2007	12007038-01	NW	EDFE095	detail of top of tower		
19/03/2007	12007039-01	NE	EDFE095	detail of top of tower		
19/03/2007	12007040-01	NE	EDFE095	detail of lower stage		
19/03/2007	12007041-01	ENE	EDFE095	close up of insulators		
19/03/2007	12007042-01	ENE	EDFE095	close up of insulators		
19/03/2007	12007043-01	ENE	EDFE095	close up of yellow/green labels		
19/03/2007	12007044-01	NW	EDFE095	close up of lower stage		

19/03/2007	12007045-01	NW	YYJ002	light on glass insulators		
19/03/2007	12007046-01	E	EDFE095	W face		
19/03/2007	12007047-01	SE	EDFE095	NW corner		
19/03/2007	12007048-01	S	EDFE095	N face		
19/03/2007	12007049-01	SW	EDFE095	NE corner		
19/03/2007	12007050-01	W	EDFE095	E face		
19/03/2007	12007051-01	W	EDFE095	E face		
19/03/2007	12007052-01	W	EDFE095	E face		
19/03/2007	12007053-01	NW	EDFE095	SE corner		
19/03/2007	12007054-01	N	EDFE095	S face		
19/03/2007	12007055-01	NE	EDFE095	SW corner		
19/03/2007	12007056-01	NE	National Grid and EDFE powerlines on N and E side of Hackney Marshes	Hackney Marshes panorama		
19/03/2007	12007057-01	NE		Hackney Marshes panorama		
19/03/2007	12007058-01	NE		Hackney Marshes panorama		
19/03/2007	12007059-01	E		Hackney Marshes panorama		
19/03/2007	12007060-01	E		Hackney Marshes panorama		
19/03/2007	12007061-01	E		Hackney Marshes panorama		
19/03/2007	12007062-01	E		Hackney Marshes panorama		
19/03/2007	12007063-01	SE		Hackney Marshes panorama		
19/03/2007	12007064-01	SE		Hackney Marshes panorama		
19/03/2007	12007065-01	SE		Hackney Marshes panorama		
19/03/2007	12007066-01	WSW	YYJ001	River Lea and encased EDFE transmission line		
19/03/2007	12007067-01	WSW	YYJ001	River Lea and encased EDFE transmission line		
19/03/2007	12007068-01	WSW	YYJ001	River Lea and encased EDFE transmission line		
19/03/2007	12007069-01	WSW	YYJ001	River Lea and encased EDFE transmission line		
19/03/2007	12007070-01	ESE	YYJ002	From footbridge over Lea		
19/03/2007	12007071-01	NNW	YYJ015, EDFE108	corner towers		
19/03/2007	12007072-01	NNW	YYJ015, EDFE108	corner towers		
19/03/2007	12007073-01	NNW	YYJ015, EDFE108	corner towers with Olympic notice in foreground		
19/03/2007	12007074-01	NNW	YYJ015, EDFE108	corner towers		
19/03/2007	12007075-01	NNW	YYJ015, EDFE108	corner towers		
19/03/2007	12007076-01	NW	YYJ015, EDFE108	corner towers		

19/03/2007	12007077-01	NNE	YYJ015, EDFE108	pylon, sunlit		
19/03/2007	12007078-01	NNE	YYJ015, EDFE108	pylon, sunlit		
19/03/2007	12007079-01	NE	YYJ016, EDFE109	Intermediate towers		
19/03/2007	12007080-01	NE	YYJ016	As 79, individual shot		
19/03/2007	12007081-01	NE	EDFE109	As 79, individual shot		
19/03/2007	12007082-01	SE	EDFE110	substation, EDFE tower & transformers		
19/03/2007	12007083-01	NNW	YYJ015, EDFE108	As 76		
19/03/2007	12007084-01	E	YYJ016	over Lea Valley towards Stratford Stn. City Mill River in foreground		
19/03/2007	12007085-01	SE	EDFE110, etc	Wirescape and substation at EDFE110, Abbey Mills Pumping Station in background		
19/03/2007	12007086-01	SSE	EDFE110, etc	As 085, further W		
19/03/2007	12007087-01	SSE	EDFE110, etc	As 086		
19/03/2007	12007088-01	SSE	EDFE intermediate towers	As 086		
19/03/2007	12007089-01	SE	EDFE110	As 082		
19/03/2007	12007090-01	SE	EDFE110	As 082		
19/03/2007	12007091-01	SW	EDFE114	terminus tower, also in 093 from different angle		
19/03/2007	12007092-01	SSE	YYJ020	Riverside Road' Council houses to right		
19/03/2007	12007093-01	SSE	EDFE114, YYJ020	Riverside Road' Council houses to right		
19/03/2007	12007095-01	SE	EDFE114	Riverside Road' terminus tower behind council house		
19/03/2007	12007096-01	E	EDFE114	Terminal tower over roofs		
19/03/2007	12007097-01	ENE	YYJ020	Abbey Lane (closed)		
19/03/2007	12007098-01	ENE	YYJ020	Abbey Lane (closed)		
19/03/2007	12007099-01	W	YYJ020	Tower along Northern Outfall sewer embankment. (line crosses sewer). Bridge over Abbey Road		
19/03/2007	12007101-01	ESE	YYJ021, YYJ022	along top of Northern Outfall, 2 pylons		
19/03/2007	12007102-01	ESE	YYJ021, YYJ022	As 101		
19/03/2007	12007103-01	ESE	YYJ021, YYJ022	As 101		
19/03/2007	12007104-01	ESE	YYJ020	As 97		
19/03/2007	12007105-01	ESE	YYJ020	As 97		
20/03/2007	12007106-01	SW	YYJ025, YYJ026, EDFE119	Terminals of 4 lines at Bow Creek. EDF to right, NGT next, then 2 other lines just to SE. Opp 'Pylon Industrial Estate', corner of Cody Rd and Stephenson St.		
20/03/2007	12007107-01	SW	YYJ025	location as 106		
20/03/2007	12007108-01	SSW	YYJ025	terminals of EDF & NGT		

20/03/2007	12007109-01	SW	YYJ025	corner of NGT pylon - 3 arms at each level.		
20/03/2007	12007110-01	SW	YYJ025	As 109		
20/03/2007	12007111-01	SW	YYJ025	As 109		
20/03/2007	12007112-01	SW	YYJ025	As 109		
20/03/2007	12007113-01	W	YYJ025	corner of NGT tower		
20/03/2007	12007114-01	SW	YYJ025	terminal of NGT. Canary Wharf to left & Dartmouth Arms		
20/03/2007	12007115-01	NW	YYJ025	corner of tower		
20/03/2007	12007116-01	NW	YYJ025	As 115		
20/03/2007	12007117-01	NW	YYJ025	SE corner of corner pylon, looking up.		
20/03/2007	12007118-01	SW		Cody St. 'Pylon Trading Estate' close up		
20/03/2007	12007119-01	ENE	YYJ025	W face corner NGT tower		
20/03/2007	12007120-01		YYJ025	'Pylon Trading Estate' close up		
20/03/2007	12007121-01		YYJ025	E face of NGT tower		
20/03/2007	12007122-01	SW		As 118		
20/03/2007	12007123-01		YYJ025	Vertical up centre of corner NGT tower		
20/03/2007	12007124-01		YYJ025	vertical up curve on W face corner NGT tower. Centred and off centre		
20/03/2007	12007125-01		YYJ025	vertical up S face same tower		
20/03/2007	12007126-01		YYJ025	As 125		
20/03/2007	12007127-01		YYJ025	vertical up SE corner same tower		
20/03/2007	12007128-01	W	YYJ025	ground level of this corner tower. Car park, DHL lorries & cars round base of tower - thanks to staff of DHL Docklands Service Centre		
20/03/2007	12007129-01	W	YYJ025	As 128, close up		
20/03/2007	12007130-01	W	YYJ025	As 128		
20/03/2007	12007131-01		YYJ025	vertical up inside of SW corner leg		
20/03/2007	12007132-01		YYJ025	As 131, various photos with details of insulators on cable, ceramic hanging insulators and barbed wire		
20/03/2007	12007133-01		YYJ025	As 132		
20/03/2007	12007134-01		YYJ025	As 132		
20/03/2007	12007135-01		YYJ025	As 132		
20/03/2007	12007136-01		YYJ025	As 132		
20/03/2007	12007137-01		YYJ025	As 132		
20/03/2007	12007138-01		YYJ025	As 123, vertical up centre		
20/03/2007	12007139-01		YYJ025	As 132		

20/03/2007	12007140-01		YYJ025	As 132		
20/03/2007	12007141-01	NNW		West Ham substation, Cody Road		
20/03/2007	12007142-01		YYJ025	Corner tower YYJ025 and Dartmouth Arms public house		
20/03/2007	12007143-01	S		Electrical EDF Depot. Dome behind, white EDF lorries		
20/03/2007	12007144-01	NNW		As 141		
20/03/2007	12007145-01		YYJ025	As 142		
20/03/2007	12007146-01	S		As 143		
20/03/2007	12007147-01	NNW		As 141		
20/03/2007	12007148-01	NNW	YYJ025	up Stevenson St, 2 NGT pylons from corner		
20/03/2007	12007149-01	W	YYJ026	across Stevenson St to sub station (betw. Dartmouth Arms and DHL)		
20/03/2007	12007150-01	W	YYJ026	As 149		
20/03/2007	12007151-01	W	YYJ026	As 149		
20/03/2007	12007152-01	W	YYJ026	As 149		
20/03/2007	12007153-01	W		Sub station - close up of long conical insulators and oil-cooled grey metal cylinders		
20/03/2007	12007154-01	SSW	YYJ025	close up of each arm & connectors of corner NGT tower (going clockwise across N face of tower)		
20/03/2007	12007155-01	SSW	YYJ025	As 154		
20/03/2007	12007156-01	SSW	YYJ025	As 154		
20/03/2007	12007157-01	SSW	YYJ025	As 154		
20/03/2007	12007158-01	SSW	YYJ025	As 154		
20/03/2007	12007159-01	SSW	YYJ025	As 154		
20/03/2007	12007160-01	SSW	YYJ025	As 154		
20/03/2007	12007161-01	SSW	YYJ025	As 154		
20/03/2007	12007162-01	SSW	YYJ025	As 154		
20/03/2007	12007163-01	S	YYJ025	NGT terminal tower & EDF tower		
20/03/2007	12007164-01	SSW	YYJ025	EDF tower and 2 concrete gantries		
20/03/2007	12007165-01	SSE	YYJ025	EDF tower and cake stand transformers		
20/03/2007	12007166-01		YYJ025	Mystery Pylon		
20/03/2007	12007167-01	SSE	YYJ025	As 165		
20/03/2007	12007168-01		YYJ025	Detail of insulators and cross arms		
20/03/2007	12007169-01		YYJ025	Detail of insulators and cross arms		
20/03/2007	12007170-01	SSE	YYJ025	As 165		

20/03/2007	12007171-01	SSE	YYJ025	As 165		
20/03/2007	12007172-01	SSE	YYJ025	As 165		
20/03/2007	12007173-01	SSW	YYJ025	detail of gantry and 3 types of insulators		
20/03/2007	12007174-01	SSW	YYJ025	As 168		
20/03/2007	12007175-01	SSW	YYJ025	As 168		
20/03/2007	12007176-01	SSW	YYJ025	As 168		
20/03/2007	12007177-01	SSW	YYJ025	As 168		
20/03/2007	12007178-01	W		security on W side of gate into West Ham substation		
20/03/2007	12007179-01	W		As 178		
20/03/2007	12007180-01	W		As 178		
20/03/2007	12007181-01	SSW		Insulators		
20/03/2007	12007182-01	SSW		Insulators		
20/03/2007	12007183-01	W		High voltage capacitor banks		
20/03/2007	12007183-02	W		High voltage capacitor banks		
20/03/2007	12007183-03	ENE		High voltage capacitor banks		
20/03/2007	12007183-04	ENE		High voltage capacitor banks		
20/03/2007	12007184-01	ENE		Notice to F10 Notification on gates into substation		
20/03/2007	12007185-01	ENE		Notification of a project on gates to substation		
20/03/2007	12007186-01	ESE		detail of insulators and concrete gantry		
20/03/2007	12007187-01	ESE		detail of insulators and concrete gantry		
20/03/2007	12007188-01	ESE		detail of insulators and concrete gantry		
20/03/2007	12007189-01	E		detail of insulators and concrete gantry		
20/03/2007	12007190-01	E		High voltage capacitor banks		
20/03/2007	12007191-01	N		EDF terminal tower and transformers		
20/03/2007	12007192-01	N		EDF terminal tower and transformers		
20/03/2007	12007193-01			High voltage capacitor banks		
20/03/2007	12007194-01			High voltage capacitor banks		
20/03/2007	12007195-01			Insulators and transformers		
20/03/2007	12007196-01		YYJ025	detail of insulators on NGT deviation tower		
20/03/2007	12007197-01		YYJ025	detail of insulators on NGT deviation tower		
20/03/2007	12007198-01		YYJ025	detail of insulators on NGT deviation tower		
20/03/2007	12007199-01			Insulators and transformers		

20/03/2007	12007200-01			EDF terminal tower, gantry, insulators and transformers		
20/03/2007	12007201-01			NGT deviation tower, gantry, insulators and transformers		
20/03/2007	12007202-01			insulators and transformers		
20/03/2007	12007203-01			insulators and transformers		
20/03/2007	12007204-01			insulators and transformers		
20/03/2007	12007205-01			High voltage capacitor banks		
20/03/2007	12007206-01			High voltage capacitor banks		
20/03/2007	12007207-01			High voltage capacitor banks and YYJ025		
20/03/2007	12007208-01			High voltage capacitor banks		
20/03/2007	12007209-01			High voltage capacitor banks and YYJ025		
20/03/2007	12007210-01			High voltage capacitor banks and YYJ025		
20/03/2007	12007211-01			wide views of the West Ham substation		
20/03/2007	12007212-01			wide views of the West Ham substation		
20/03/2007	12007213-01			wide views of the West Ham substation		
20/03/2007	12007214-01			wide views of the West Ham substation		
20/03/2007	12007215-01			wide views of the West Ham substation		
20/03/2007	12007216-01			wide views of the West Ham substation		
20/03/2007	12007217-01			wide views of the West Ham substation		
20/03/2007	12007218-01			wide views of the West Ham substation		
20/03/2007	12007219-01			wide views of the West Ham substation		
20/03/2007	12007220-01			reflection of pylon in window		
20/03/2007	12007221-01	ENE		detail of insulator		
20/03/2007	12007222-01	ENE		High voltage capacitor bank, detail		
20/03/2007	12007223-01	ENE		High voltage capacitor bank, detail		
20/03/2007	12007224-01	ENE		As 221		
20/03/2007	12007225-01	ENE		As 224		
20/03/2007	12007226-01	ENE		Hawker Siddeley Switchgear		
20/03/2007	12007227-01	ENE		Circuit breaker detail		
20/03/2007	12007228-01	ENE		As 227		
20/03/2007	12007229-01	ENE		As 227		
20/03/2007	12007230-01	ENE		As 227		
26/03/2007	12007231	NE	YYJ009	N. Spitalfields. Trans tower betw. Retail units including lorries		

26/03/2007	12007232	NE	YYJ009	As 231, close up of intermediate transmission tower		
26/03/2007	12007233	N	EDFE100	New Spitalfields. Car park & railway line from top of fire escape		
26/03/2007	12007234	N	EDFE100	As 233		
26/03/2007	12007235	N	EDFE100	As 233		
26/03/2007	12007236	N	EDFE100	As 233, and main market hall		
26/03/2007	12007237	NW	EDFE100, EDFE099	across car park to intermediate transmission towers		
26/03/2007	12007238	NW	EDFE100, EDFE099	As 237		
26/03/2007	12007239	NW	EDFE100	E. side of car park, and railway lines		
26/03/2007	12007240	NW	EDFE100	As 239		
26/03/2007	12007241	NW	EDFE100	Intermediate transmission tower		
26/03/2007	12007242	NW	EDFE100	Top of intermediate pylon		
26/03/2007	12007243	NW	EDFE100	detail of insulators		
26/03/2007	12007244	NW	EDFE100	As 243		
26/03/2007	12007245	NW	EDFE100	compound for storing gas canisters & diesel pump adjacent to south side of pylon		
26/03/2007	12007246	NE	EDFE100	notice board under pylon with plan of markets showing positions of pylons		
26/03/2007	12007247	NE	EDFE100	detail of above		
26/03/2007	12007248		EDFE100	upwards shot of pylon		
26/03/2007	12007249		EDFE100	As 248 - wide angle lens		
26/03/2007	12007250		EDFE100	As 249		
26/03/2007	12007251		EDFE100	As 249		
26/03/2007	12007252	N	EDFE100	NE Post detail. Holes for projecting bolts which act as a ladder		
26/03/2007	12007253	S	EDFE100	As 252		
26/03/2007	12007254	S	EDFE100	steel crash barrier surrounds pylon on N & W sides		
26/03/2007	12007255		EDFE100	detail of barbed wire		
26/03/2007	12007256		EDFE100	As 255		
26/03/2007	12007257		EDFE100	As 255		
26/03/2007	12007258	N	EDFE100	Danger of death, keep off sign, above barbed wire		
26/03/2007	12007259	NW	EDFE100	concrete pad and legs, SE corner		
26/03/2007	12007260	NW	EDFE100	As 259		
26/03/2007	12007261	N	EDFE100	Detail of N pair of support legs		
26/03/2007	12007262	N		Petra, Jordan' fruit box		

26/03/2007	12007263	N	EDFE099	Discarded vegetables and intermediate transmission tower		
26/03/2007	12007264	N	EDFE099	Intermediate transmission tower & railway line		
26/03/2007	12007265	N	EDFE099	Intermediate transmission tower		
26/03/2007	12007266	NE	EDFE099	detail, birds nest & insulator		
26/03/2007	12007267		EDFE099	upwards looking shot, intermediate transmission tower		
26/03/2007	12007268	N	EDFE099	detail of bolt & spaces. NW corner post.		
26/03/2007	12007269	NE	EDFE099	detail of bolts		
26/03/2007	12007270	NE	EDFE099	detail of bolt & spaces. NE corner post.		
26/03/2007	12007271	N	EDFE099	detail of bolts		
26/03/2007	12007272	N	EDFE099	As 271		
26/03/2007	12007273		EDFE099	upwards looking shot, intermediate transmission tower		
26/03/2007	12007274		EDFE099	upwards looking shot, intermediate transmission tower		
26/03/2007	12007275		EDFE099	detail of bolt		
26/03/2007	12007276	NE	EDFE099	detail of makers name on NE corner of post; 'BCC SH GT BRITAIN'		
26/03/2007	12007277	N	EDFE099	detail of bolts		
26/03/2007	12007278	N	EDFE099	As 277		
26/03/2007	12007279	SW	EDFE099	Detail of former position of notice board		
26/03/2007	12007280	SE	EDFE100	gen view of New Spitalfields		
26/03/2007	12007281	N	EDFE098	Pallet yard and intermediate transmission tower		
26/03/2007	12007282	N	EDFE098	Pallet yard and intermediate transmission tower		
26/03/2007	12007283	S	EDFE099	gen view of New Spitalfields		
26/03/2007	12007284	S	EDFE099	gen view of New Spitalfields		
26/03/2007	12007285	S	EDFE099	gen view of New Spitalfields		
26/03/2007	12007286	SE	EDFE100, YYJ009	shot of EDFE and NGT powerlines		
26/03/2007	12007287	SE	EDFE100, YYJ009	As above		
26/03/2007	12007288	N		Photo taken from cherry picker. Gen. Landscape		
26/03/2007	12007289	NE		As 288		
26/03/2007	12007290	SE		As 288. over market hall		
26/03/2007	12007291	SE		As 290		
26/03/2007	12007292	SE		As 290		
26/03/2007	12007293	S		As 290		
26/03/2007	12007294	S		As 290		

26/03/2007	12007295	SE		As 290		
26/03/2007	12007296	SE		As 290		
26/03/2007	12007297	E		360 degree round view		
26/03/2007	12007298	E	EDFE099	360 degree round view		
26/03/2007	12007299	NE	EDFE099	360 degree round view		
26/03/2007	12007300	NE	EDFE099	360 degree round view		
26/03/2007	12007301	N		360 degree round view		
26/03/2007	12007302	N		360 degree round view		
26/03/2007	12007303	NW		360 degree round view		
26/03/2007	12007304	NW		360 degree round view		
26/03/2007	12007305	W		360 degree round view		
26/03/2007	12007306	W		As 288, over Hackney Marshes		
26/03/2007	12007307	SW		As 288, over Hackney Marshes		
26/03/2007	12007308	SW		As 288, over Hackney Marshes		
26/03/2007	12007309	N		View of New Spitalfields Market from S side of Ruckholt Road		
26/03/2007	12007310	S	YYJ010, EDFE103	Temple Mills Lane. Intermediate transmission towers on NGT and EDFE powerlines		
26/03/2007	12007311	S	YYJ010	detail of pair of double insulators.		
26/03/2007	12007312	S	YYJ010	detail of pair of double insulators.		
26/03/2007	12007313	S	YYJ010	detail of pair of double insulators.		
26/03/2007	12007314	S	YYJ010	detail of pair of double insulators.		
26/03/2007	12007315	S	YYJ010	detail of pair of double insulators.		
26/03/2007	12007316	S	YYJ010	detail of pair of double insulators.		
26/03/2007	12007317	S	YYJ010	detail of pair of double insulators.		
26/03/2007	12007318	S	YYJ010	detail of pair of double insulators.		
26/03/2007	12007319	N	YYJ010	Temple Mills Rd, intermediate transmission tower		
26/03/2007	12007320	N	YYJ010	Temple Mills Rd, intermediate transmission tower		
26/03/2007	12007321	N	YYJ010	detail of barbed wire around legs of YYJ010		
26/03/2007	12007322	N	YYJ010	detail of structure, SW leg		
26/03/2007	12007323	N	YYJ010	Breeze block hut under NW leg		
26/03/2007	12007324	SE		warning sign: 'Warning. Premises protected by non aggressive security'		
26/03/2007	12007325	E	YYJ010	gen shot, structure		
26/03/2007	12007326	S	YYJ010	timber fence constructed of railway sleepers		

26/03/2007	12007327	S	YYJ010, EDFE102	EDFE & NGT intermediate transmission towers in Temple Mills Road		
26/03/2007	12007328	SW	EDFE102	EDFE intermediate transmission tower		
26/03/2007	12007329	S	YYJ009	NGT intermediate transmission tower and allotments, Gateway Av.		
26/03/2007	12007330	S	YYJ009	NGT intermediate transmission tower and allotments, Gateway Av.		
26/03/2007	12007331	E	YYJ009	EDFE intermediate transmission tower on traffic island in Orient Way/Marshall Rd		
26/03/2007	12007332	N	YYJ008, EDFE099	Orient Way and railway line		
26/03/2007	12007333	N	YYJ008, EDFE099	Orient Way and railway line		
26/03/2007	12007334	NE	YYJ009	detail - insulators		
26/03/2007	12007335	N	YYJ008	ducks and pond on traffic island, Orient Way/Marshall Rd		
26/03/2007	12007336		YYJ009	looking up at NGT pylon on traffic island		
26/03/2007	12007337		YYJ009	looking up at NGT pylon on traffic island		
26/03/2007	12007339	SW	YYJ009	detail of SW leg		
26/03/2007	12007340	N	YYJ009	detail of SW leg		
26/03/2007	12007341		YYJ009	detail- barbed wire and danger sign		
26/03/2007	12007342	S	YYJ010	gen shots, landscaped area on traffic island around pylon		
26/03/2007	12007343	SE	YYJ009	gen shots, landscaped area on traffic island around pylon		
26/03/2007	12007344	SE	YYJ009	gen shots, landscaped area on traffic island around pylon		
26/03/2007	12007345	SE	YYJ009	gen shots, landscaped area on traffic island around pylon		
26/03/2007	12007346	N	YYJ008	NGT intermediate transmission tower in waste management depot		
26/03/2007	12007347	S	YYJ009	NGT intermediate transmission tower on traffic island, seen from waste management depot in Orient Way		
26/03/2007	12007348	N	YYJ008	As 346		
26/03/2007	12007349	N	YYJ008	details of pylon YYJ8, National Grid Co PLC, 0800404090		
26/03/2007	12007350	NE	YYJ008	ceramic insulators		
26/03/2007	12007351	NE	YYJ008	detail of bottom left insulator		
26/03/2007	12007352	N	YYJ008	Pylon		
26/03/2007	12007353	NE		boundary fence of waste management depot		
26/03/2007	12007354	NE		ditch along Orient Way		
26/03/2007	12007355	NE		ditch along Orient way		
26/03/2007	12007356	E		ditch & fence line, N of YYJ008		
26/03/2007	12007357	N	YYJ007	NGT Intermediate transmission tower		
26/03/2007	12007358	E	YYJ007	NGT Intermediate transmission tower		

26/03/2007	12007359	NE		Group of conductor spacers between YYJ006 & YYJ007		
26/03/2007	12007360	E		As 359		
26/03/2007	12007361	E		detail of conductor spacer		
26/03/2007	12007362	E		detail of conductor spacer		
26/03/2007	12007363	E	YYJ007	close up of top of YYJ007		
26/03/2007	12007364	E	YYJ007	NGT intermediate transmission tower		
26/03/2007	12007365	E	YYJ007	NGT intermediate transmission tower		
26/03/2007	12007366	N	YYJ006	NGT intermediate transmission tower		
26/03/2007	12007367	N	YYJ006	NGT intermediate transmission tower		
27/03/2007	12007368	SW	EDFE115	Abbey Mills Pumping Station		
27/03/2007	12007369	SW	EDFE115	Abbey Mills Pumping Station		
27/03/2007	12007370	SW		Abbey Mills Pumping Station		
27/03/2007	12007371	SW	EDFE114	Abbey Mills Pumping Station		
27/03/2007	12007372	NW	YYJ020	National Grid pylons from Greenway		
27/03/2007	12007373	NW	YYJ020, YYJ019	National Grid pylons from Greenway		
27/03/2007	12007374	NW	YYJ020, YYJ019	National Grid pylons from Greenway		
27/03/2007	12007375	NE	YYJ021	The Snail', former pump, now public art		
27/03/2007	12007376	SW	EDFE115	Suspension tower		
27/03/2007	12007377	SW	EDFE115	Suspension tower		
27/03/2007	12007378	N	YYJ020	Pumping station and suspension tower		
27/03/2007	12007379	S		NGT transmission towers and the River Lea		
27/03/2007	12007380	E		NGT transmission towers and office building by the Lea		
27/03/2007	12007381	NW	EDFE115	EDFE transmission tower and Abbey Mills Pumping Station		
27/03/2007	12007382	SW		Wooden hoarding across Lea River towpath and signpost: 'towpath closed'		
27/03/2007	12007383	SW		Wooden hoarding across Lea River towpath and signpost: 'towpath closed'		
27/03/2007	12007384	NE		Footpath arrow: 'walk the Olympic park'		
27/03/2007	12007385	NE		Footpath arrow: 'walk the Olympic park'		
27/03/2007	12007386	S		Wooden hoarding across Lea River towpath and signpost: 'advanced notification'		
27/03/2007	12007387	S		Wooden hoarding across Lea River towpath and signpost: 'advanced notification'		
27/03/2007	12007388	E	YYJ022	NGT intermediate transmission tower reflected in the River Lea		
27/03/2007	12007389	E	YYJ022	NGT intermediate transmission tower reflected in the River Lea		
27/03/2007	12007390	NW	EDFE115	EDFE intermediate transmission tower from the west bank of the River Lea		

27/03/2007	12007391	NW	EDFE115	EDFE intermediate transmission tower from the west bank of the River Lea		
27/03/2007	12007392	NW	EDFE115	Detail of glass and ceramic insulators		
27/03/2007	12007393	NW	EDFE115	Detail of glass and ceramic insulators		
27/03/2007	12007394	N	EDFE115	EDFE intermediate transmission tower from the west bank of the River Lea		
27/03/2007	12007395	N	YYJ021	NGT intermediate transmission tower seen through trees		
27/03/2007	12007396	N	YYJ021	NGT intermediate transmission tower on N side of northern outfall		
27/03/2007	12007397	N	YYJ021	NGT intermediate transmission tower on N side of northern outfall		
27/03/2007	12007398	N	YYJ021	NGT intermediate transmission tower on N side of northern outfall		
27/03/2007	12007399	S		EDFE and NGT transmission towers in West Ham		
27/03/2007	12007400	S		EDFE and NGT transmission towers in West Ham		
27/03/2007	12007401	NW	YYJ021	NGT transmission tower seen from northern outfall		
27/03/2007	12007402	NW	YYJ021	NGT transmission tower seen from northern outfall		
27/03/2007	12007403	NW	YYJ021	NGT transmission tower seen from northern outfall		
27/03/2007	12007404	N	YYJ021	Base of NGT transmission tower and its compound		
27/03/2007	12007405	N	YYJ021	Base of NGT transmission tower and its compound, with public footpath passing beneath the pylon		
27/03/2007	12007406	N	YYJ021	Barbed wire around SE leg of YYJ021		
27/03/2007	12007407	N	YYJ021	Barbed wire around SE leg of YYJ021		
27/03/2007	12007408	N	YYJ021	Barbed wire around SW leg of YYJ021		
27/03/2007	12007409	S	YYJ021	Base of transmission tower leg		
27/03/2007	12007410	E	YYJ021	Base of transmission tower leg		
27/03/2007	12007411	NE	YYJ021	Possible communications cable		
27/03/2007	12007412	NE	YYJ021	Possible communications cable		
27/03/2007	12007413	NE	YYJ021	Possible communications cable		
27/03/2007	12007414	NE	YYJ021	Junction box of possible communications cable		
27/03/2007	12007415	SE	YYJ022, YYJ023	NGT intermediate transmission towers		
27/03/2007	12007416	S	YYJ021	NGT intermediate transmission tower and entrance to the Greenway footpath		
27/03/2007	12007417	S	YYJ021	NGT intermediate transmission tower and entrance to the Greenway footpath		
27/03/2007	12007418			Sign for LEA Valley Walk set into pavement adjacent to YYJ021		
27/03/2007	12007419	SE	YYJ021	NGT intermediate transmission tower and entrance to the Greenway footpath		
27/03/2007	12007420	SE	YYJ021	NGT intermediate transmission tower and entrance to the Greenway footpath		
27/03/2007	12007421	W	YYJ021	Human sundial set into the top surface of the northern outfall, on alignment with the Greenwich Meridian.		

27/03/2007	12007422	W	YYJ021	Human sundial (tested by Maria Utrero) set into the top surface of the northern outfall, on alignment with the Greenwich Meridian.		
27/03/2007	12007423	W	YYJ021	Human sundial (tested by Edwin Baker) set into the top surface of the northern outfall, on alignment with the Greenwich Meridian.		
27/03/2007	12007424	NE		Map of the Greenway footpath and cycleway		
27/03/2007	12007425	N	YYJ019	NGT intermediate transmission tower and public recreation ground		
27/03/2007	12007426	N	YYJ019	NGT intermediate transmission tower and children's playground		
27/03/2007	12007427	N	YYJ019	Base of NGT intermediate transmission tower, with double circuit of barbed wire around legs		
27/03/2007	12007428	E	YYJ019	Base of NGT intermediate transmission tower, with double circuit of barbed wire around legs		
27/03/2007	12007429	E	YYJ019	Base of NGT intermediate transmission tower, with double circuit of barbed wire around legs		
27/03/2007	12007430	E	YYJ019	Possible glass or polymer insulators		
27/03/2007	12007431	E	YYJ019	National Grid Company plc plate on side of YYJ019		
27/03/2007	12007432	N	YYJ018, EDFE113	Children's playground adjacent to YYJ019		
27/03/2007	12007433	N	YYJ019	Notice board for Abbey Lane open space		
27/03/2007	12007434	SE	YYJ020	Base of intermediate transmission tower surrounded by timber fence, off Abbey Lane		
27/03/2007	12007435	NW	YYJ020	Fly tipping adjacent to YYJ020 in Abbey Lane		
27/03/2007	12007436	NW	YYJ020	Foundation of fence under YYJ020		
27/03/2007	12007437	N	EDFE114	Terminal tower EDFE114		
27/03/2007	12007438	N	EDFE114	Top of EDFE114		
27/03/2007	12007439	NE	EDFE114	Terminal tower EDFE114		
27/03/2007	12007440	NE	EDFE114	Terminal tower EDFE114		
27/03/2007	12007441	ESE	YYJ021	Abbey Mills Pumping Station		
27/03/2007	12007442	ESE	YYJ021	Abbey Mills Pumping Station		
27/03/2007	12007443	ESE	YYJ021	Abbey Mills Pumping Station		
27/03/2007	12007444	N	EDFE114	Detail of ceramic insulators		
27/03/2007	12007445	N	EDFE114	Detail of ceramic insulators		
27/03/2007	12007446	N	EDFE114	Detail of ceramic insulators		
27/03/2007	12007447	N	EDFE114	Detail of steel gantry, conductors and insulators for diverting powerline below ground		
27/03/2007	12007448	N	EDFE114	Detail of steel gantry, conductors and insulators for diverting powerline below ground		
27/03/2007	12007449	N	EDFE114	Detail of steel gantry, conductors and insulators for diverting powerline below ground		
27/03/2007	12007450	NW	EDFE114	Red, yellow and blue coloured 'targets' and PKD11 plate		
27/03/2007	12007451	NW	EDFE114	Detail of steel gantry, conductors and insulators for diverting powerline below ground		
27/03/2007	12007452	NW	EDFE114	Detail of black & green, and yellow & green plates adjacent to arms at top of terminal tower		

27/03/2007	12007453	NW	EDFE114	Detail of steel gantry, conductors and insulators for diverting powerline below ground		
27/03/2007	12007454	W	EDFE114	Concrete base of NE leg		
27/03/2007	12007455	NW	EDFE114	Concrete base of NE leg and casings of conductors diverted underground		
27/03/2007	12007456	S	EDFE114	Concrete bases of legs and casings of conductors diverted underground		
27/03/2007	12007457	S	EDFE114	Concrete bases of legs and casings of conductors diverted underground		
27/03/2007	12007458	S	EDFE114	Concrete bases of legs and casings of conductors diverted underground		
27/03/2007	12007459	SE	EDFE114	Concrete bases of legs and casings of conductors diverted underground		
27/03/2007	12007460	SE	EDFE114	Concrete bases of legs and casings of conductors diverted underground		
27/03/2007	12007461	NW	EDFE114	External steel fence of secure compound surrounding terminal tower		
27/03/2007	12007462	NW	EDFE114	Sticker adjacent to entrance gate to secure compound. Indicates when the compound was last cleared of weeds		
27/03/2007	12007463	NW	EDFE114	Underside of steel gantry		
27/03/2007	12007464	SE	YYJ019	Entry to Greenway footpath S of Stratford High Street		
27/03/2007	12007465	SE	YYJ019	Entry to Greenway footpath S of Stratford High Street		
27/03/2007	12007466	SE	YYJ019	Entry to Greenway footpath S of Stratford High Street		
27/03/2007	12007467	NW	EDFE113, YYJ018	Entry to Greenway footpath N of Stratford High Street		
27/03/2007	12007468	NW	EDFE113, YYJ018	Entry to Greenway footpath N of Stratford High Street		
27/03/2007	12007469	NW	EDFE113, YYJ018	Entry to Greenway footpath N of Stratford High Street		
27/03/2007	12007470	N	YYJ018	Intermediate transmission tower from northern outfall		
27/03/2007	12007471	SE	EDFE113	Conductors diverted under ground at terminal transmission tower EDFE113		
27/03/2007	12007472	SE	EDFE113	Conductors diverted under ground at terminal transmission tower EDFE113		
27/03/2007	12007473	E	EDFE113	Conductors diverted under ground at terminal transmission tower EDFE113		
27/03/2007	12007474	SE	EDFE113	Conductors diverted under ground at terminal transmission tower EDFE113		
27/03/2007	12007475	E	EDFE113	Conductors diverted under ground at terminal transmission tower EDFE113		
27/03/2007	12007476	SE	EDFE113	Conductors diverted under ground at terminal transmission tower EDFE113		
27/03/2007	12007478	SW	EDFE113	Conductor encased in oil-filled outer sheath, contained in steel casing		
27/03/2007	12007479	SW	EDFE113	Conductor encased in oil-filled outer sheath, contained in steel casing		
27/03/2007	12007480	SW	EDFE113	Conductor encased in oil-filled outer sheath, contained in steel casing		
27/03/2007	12007481	SW	EDFE113	Conductor encased in oil-filled outer sheath, diverted below ground		
27/03/2007	12007482	SE	EDFE113	Communications box, painted green		
27/03/2007	12007483	SE	EDFE113	Communications box, painted green		
27/03/2007	12007484	NE	EDFE113	Looking up at the steel gantries on terminal tower EDFE113		

27/03/2007	12007485	NW	EDFE113	New outer steel case alongside older green-painted steel cases, housing conductors before being diverted below ground		
27/03/2007	12007486	E	EDFE113	New outer steel case alongside older green-painted steel cases, housing conductors before being diverted below ground		
27/03/2007	12007487	E	EDFE113	Outer steel palisade fence, surrounding secure compound		
27/03/2007	12007488	SW	EDFE113	Outer steel palisade fence, surrounding secure compound		
27/03/2007	12007489	SW	EDFE113	Outer steel palisade fence, surrounding secure compound		
27/03/2007	12007490	SW	EDFE113	Concrete cover for sub-surface high voltage electrical conductor, adjacent to EDFE113		
27/03/2007	12007491	SW	EDFE113	Concrete cover for sub-surface high voltage electrical conductor, adjacent to EDFE113		
16/05/2007	17607327	SW	YYJ019	Stratford High Street and intermediate transmission tower YYJ019	538288	183548
16/05/2007	17607328	SW	YYJ019	Stratford High Street and intermediate transmission tower YYJ019	538288	183548
16/05/2007	17607329	NE	EDFE113, YYJ018	Stratford High Street and the N entrance to the Greenway footpath	538343	183594
16/05/2007	17607330	NE	EDFE113, YYJ018	Stratford High Street and the N entrance to the Greenway footpath	538343	183594
16/05/2007	17607331	N	YYJ018	NGT Intermediate transmission tower	538267	183605
16/05/2007	17607332	N	YYJ018	NGT Intermediate transmission tower	538267	183605
16/05/2007	17607333	W	EDFE113	EDFE terminal transmission tower and fig tree on the banks of the Waterworks River	538268	183611
16/05/2007	17607334	W	EDFE113	EDFE terminal transmission tower and fig tree on the banks of the Waterworks River	538287	183600
16/05/2007	17607335	NNE	YYJ018	Information board under YYJ018	538258	183616
16/05/2007	17607336	E	YYJ018	Detail of steel leg	538266	183635
16/05/2007	17607337	ESE		Greenway footpath N of Stratford High Street	538137	183650
16/05/2007	17607338	S		City Mill River from northern outfall	538047	183660
16/05/2007	17607339	S		City Mill River from northern outfall	538047	183660
16/05/2007	17607340	S		City Mill River from northern outfall	538047	183660
16/05/2007	17607341	N	EDFE112	Quay and intermediate transmission tower EDFE112	538023	183671
16/05/2007	17607342	N	EDFE112	Quay and intermediate transmission tower EDFE112	538023	183671
16/05/2007	17607343	N		GER bridge over City Mill River	538023	183671
16/05/2007	17607344	N		GER bridge over City Mill River	538023	183671
16/05/2007	17607345	N		GER bridge over City Mill River	538023	183671
16/05/2007	17607346	N	EFFE112	Top of EDFE112	538054	183664
16/05/2007	17607347	N	EDFE112	Top of EDFE112	538054	183664
16/05/2007	17607348	N		GER bridge over City Mill River	538011	183689
16/05/2007	17607349	N		GER bridge over City Mill River	538011	183689
16/05/2007	17607350	N		GER line crossing northern outfall	538011	183689

16/05/2007	17607351	NNE	EDFE112	Detail of legs of pylon set into earth bank above City Mill River	538017	183680
16/05/2007	17607352	NNE	EDFE112	Detail of legs of pylon set into earth bank above City Mill River	538017	183680
16/05/2007	17607353	E		Greenway footpath and discarded possible electrical conducting cable	538014	183688
16/05/2007	17607354	ENE	EDFE112	Wirescape, where GER line crosses northern outfall	537899	183696
16/05/2007	17607355	ENE	EDFE112	Wirescape, where GER line crosses northern outfall	537899	183696
16/05/2007	17607356	NE	EDFE111, EDFE110, YYJ016	Transmission towers visible from the Greenway footpath where it crosses Pudding Mill Lane	537723	183760
16/05/2007	17607357	NE	EDFE111, EDFE110, YYJ016	Transmission towers visible from the Greenway footpath where it crosses Pudding Mill Lane	537723	183760
16/05/2007	17607358	NE	EDFE111, EDFE110, YYJ016	Transmission towers visible from the Greenway footpath where it crosses Pudding Mill Lane	537723	183760
16/05/2007	17607359	NE	EDFE111, EDFE110, YYJ016	Transmission towers visible from the Greenway footpath where it crosses Pudding Mill Lane	537723	183760
16/05/2007	17607360	S		GER viaduct crossing Pudding Mill Lane and Marshgate Lane, from the Greenway footpath on the northern outfall	537817	183719
16/05/2007	17607361	SSE	EDFE113	Terminal transmission tower N of Stratford High Street	538228	183627
16/05/2007	17607362	SSE	EDFE113	Terminal transmission tower N of Stratford High Street	538228	183627
16/05/2007	17607363	WNW	EDFE113	Terminal transmission tower N of Stratford High Street	538311	183562
16/05/2007	17607364	WNW	EDFE113	Terminal transmission tower N of Stratford High Street	538311	183562
16/05/2007	17607365	NE	EDFE113, YYJ018	Junction of Stratford High Street and Blaker Road	538219	183458
16/05/2007	17607366	NE	EDFE113, YYJ018	Junction of Stratford High Street and Blaker Road	538219	183458
16/05/2007	17607367	NE	EDFE113, YYJ018	Junction of Stratford High Street and Blaker Road	538219	183458
16/05/2007	17607368	ENE	EDFE113, YYJ018	View of transmission towers from Otter Close	538197	183585
16/05/2007	17607369	ENE	EDFE113	Viewed from Otter Close	538197	183585
16/05/2007	17607370	ENE	YYJ018	Viewed from Otter Close	538197	183585
16/05/2007	17607371	E	EDFE113	Steel casings for oil-filled cables diverted below ground	538226	183584
16/05/2007	17607372	SW	YYJ016	Intermediate transmission tower adjacent to Carpenters Road	538060	184293
16/05/2007	17607373	SW	YYJ016	Intermediate transmission tower adjacent to Carpenters Road	538060	184293
16/05/2007	17607374	SE	YYJ016	Intermediate transmission tower adjacent to Carpenters Road	538026	184319
16/05/2007	17607375	SSE	EDFE109, YYJ016	Transmission towers visible from Carpenters Road	537977	184359
16/05/2007	17607376	SSE	EDFE109, YYJ016	Transmission towers visible from Carpenters Road	537977	184359
16/05/2007	17607377	WNW	EDFE110	Intermediate transmission tower serving substation	537977	184359
16/05/2007	17607378	WNW	EDFE110	Intermediate transmission tower serving substation	537977	184359

16/05/2007	17607379	N	YYJ014, EDFE107	Intermediate transmission towers	537780	184503
16/05/2007	17607380	NNW	EDFE104, YYJ012	Deviation transmission towers in Clays Lane	537989	185171
16/05/2007	17607381	NNW	EDFE104	Deviation transmission tower	537989	185171
16/05/2007	17607382	NNW	EDFE104	Deviation transmission tower	537989	185171
16/05/2007	17607383	NNW	EDFE104	Deviation transmission tower	537989	185171
16/05/2007	17607384	NNW	YYJ012	Deviation transmission tower	537989	185171
16/05/2007	17607385	WNW	EDFE104	Deviation transmission tower in Clays Lane Travellers' Site	538084	185256
16/05/2007	17607386	ESE	YYJ012	Deviation transmission tower on land between Clays Lane and former marshalling yard	538084	185256
16/05/2007	17607387	N		Eastway Cycle Circuit from Clays Lane	537916	185353
16/05/2007	17607388	N		Eastway Cycle Circuit from Clays Lane	537916	185353
16/05/2007	17607389	N		Eastway Cycle Circuit from Clays Lane	538066	185413
16/05/2007	17607390	N		Eastway Cycle Circuit from Clays Lane	538066	185413
16/05/2007	17607391	N		Eastway Cycle Circuit from Clays Lane	538066	185413
16/05/2007	17607392	N		Compulsory purchase notice on boundary fence between Eastway Cycle Circuit and Clays Lane	537935	185353
16/05/2007	17607393	S		Transmission towers to the south of Clays Lane	537926	185288
16/05/2007	17607394	S		Transmission towers to the south of Clays Lane	537926	185288
16/05/2007	17607395	S		Transmission towers to the south of Clays Lane	537926	185288
16/05/2007	17607396	S		Transmission towers to the south of Clays Lane	537911	185303
16/05/2007	17607397	S		Transmission towers to the south of Clays Lane	537911	185303
16/05/2007	17607398	S		Transmission towers to the south of Clays Lane	537909	185302
16/05/2007	17607399	S		Transmission towers to the south of Clays Lane	537909	185302
16/05/2007	17607400	S		Transmission towers to the south of Clays Lane	537909	185302
16/05/2007	17607401	SE	EDFE104, YYJ012	Deviation transmission towers in Clays Lane	537909	185302
16/05/2007	17607402	SE	EDFE104, YYJ012	Deviation transmission towers in Clays Lane	537909	185302
16/05/2007	17607403	SE	EDFE104, YYJ012	Deviation transmission towers in Clays Lane	537909	185302
16/05/2007	17607404	SE	EDFE104, YYJ012	Deviation transmission towers in Clays Lane	537909	185302
16/05/2007	17607405	ESE	EDFE107, YYJ014	Waterden Road, entrance to Stratford International station	537545	184651
16/05/2007	17607406	ESE	EDFE107, YYJ014	Waterden Road, entrance to Stratford International station	537545	184683
16/05/2007	17607407	SSE	EDFE107, YYJ014	Waterden Road, entrance to Stratford International station	537548	184692
16/05/2007	17607408	SSE	EDFE107, YYJ014	Waterden Road, entrance to Stratford International station	537548	184692
16/05/2007	17607409	S	EDFE108, YYJ015	Waterden Road, entrance to Stratford International station	537548	184692
16/05/2007	17607410	S	EDFE108, YYJ015	Waterden Road, entrance to Stratford International station	537548	184692

17/05/2007	17607411	NE	EDFE105	Intermediate transmission tower on sloping bank at Celsius First cold storage depot in Clays Lane	537811	185023
17/05/2007	17607412	NE	EDFE105	Intermediate transmission tower on sloping bank at Celsius First cold storage depot in Clays Lane	537811	185023
17/05/2007	17607413	SW	EDFE106	Celsius First cold storage depot	537823	185021
17/05/2007	17607414	SW	EDFE106	Celsius First cold storage depot	537823	185021
17/05/2007	17607415	S	EDFE106	Celsius First cold storage depot - EDFE deviation tower	537809	184953
17/05/2007	17607416	SW	EDFE106	Celsius First cold storage depot - deviation tower	537809	184953
17/05/2007	17607417	SW	EDFE106	Celsius First cold storage depot - deviation tower	537809	184953
17/05/2007	17607418	SW	EDFE106	Detail of deviation tower	537809	184953
17/05/2007	17607419	SSW	EDFE106, EDFE107, YYJ014	S end of Celsius First cold storage depot	537744	184840
17/05/2007	17607420	SSW	EDFE107, YYJ014	S end of Celsius First cold storage depot	537744	184840
17/05/2007	17607421	S	EDFE107, YYJ014	S end of Celsius First cold storage depot	537744	184840
17/05/2007	17607422	S	EDFE107, YYJ014	S end of Celsius First cold storage depot	537744	184840
17/05/2007	17607423	S	YYJ014,	S end of Celsius First cold storage depot	537744	184840
17/05/2007	17607424	S	YYJ014	S end of Celsius First cold storage depot	537736	184840
17/05/2007	17607425	S		S end of Celsius First cold storage depot	537736	184840
17/05/2007	17607426	W		Steel footings for new temporary transmission tower, S end of Celsius First cold storage depot	537761	184806
17/05/2007	17607427	NW	EDFE106	S end of Celsius First cold storage depot	537761	184806
17/05/2007	17607428	N	EDFE106	Intermediate transmission tower, S end of Celsius First cold storage depot	537753	184801
17/05/2007	17607429	WNW	EDFE106	Detail of intermediate transmission tower	537721	184833
17/05/2007	17607430	SSW	YYJ015	Deviation transmission tower S of cold storage depot	537737	184825
17/05/2007	17607431	NE	YYJ013	Intermediate transmission tower in Celsius First car park. Formerly used as entrance gate, with vehicles passing beneath structure	537792	184789
17/05/2007	17607432	NE	YYJ013	Intermediate transmission tower in Celsius First car park	537792	184789
17/05/2007	17607433	NE	YYJ013	Intermediate transmission tower in Celsius First car park	537851	184837
17/05/2007	17607434	NE	YYJ013	Intermediate transmission tower in Celsius First car park	537851	184837
17/05/2007	17607435	NE	YYJ013	Detail of intermediate transmission tower in Celsius First car park	537851	184837
17/05/2007	17607436	W	EDFE106	Intermediate transmission tower from roof of Celsius First	537770	184879
17/05/2007	17607437	W	EDFE106	Intermediate transmission tower from roof of Celsius First	537770	184879
17/05/2007	17607438	WNW		Eastway Cycle track, from roof of Celsius First	537770	184879
17/05/2007	17607439	WNW		Eastway Cycle track, from roof of Celsius First	537770	184879
17/05/2007	17607440	W	EDFE106	Intermediate transmission tower from roof of Celsius First	537770	184879
17/05/2007	17607441	WSW	EDFE106	Intermediate transmission tower from roof of Celsius First	537770	184879

17/05/2007	17607442	SW		Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607443	S		Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607444	S		Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607445	S		Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607446	S		Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607447	SE		Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607448	SE		Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607449	SE		Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607450	SE	YYJ013	Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607451	E	YYJ013	Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607452	E	YYJ013	Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607453	E		Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607454	NE		Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607455	NE		Panoramic shots of Stratford from roof of Celsius First - Clays Lane housing cooperative	537770	184879
17/05/2007	17607456	NE		Panoramic shots of Stratford from roof of Celsius First - Clays Lane housing cooperative	537770	184879
17/05/2007	17607457	NE		Panoramic shots of Stratford from roof of Celsius First - Clays Lane housing cooperative	537770	184879
17/05/2007	17607458	N		Panoramic shots of Stratford from roof of Celsius First - Eastway Cycle track	537770	184879
17/05/2007	17607459	N		Panoramic shots of Stratford from roof of Celsius First - Eastway Cycle track	537770	184879
17/05/2007	17607460	N		Panoramic shots of Stratford from roof of Celsius First - Eastway Cycle track	537770	184879
17/05/2007	17607461	N		Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607462	NW		Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607463	NW		Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607464	NW		Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607465	W	EDFE106	Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607466	W	EDFE106	Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607467	SW	EDFE107, YYJ014	Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607468	SW	EDFE107, YYJ014	Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607469	SW	EDFE107, YYJ014	Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607470	SW	EDFE107, YYJ014	Panoramic shots of Stratford and east London from roof of Celsius First	537770	184879
17/05/2007	17607471	N		University of East London accommodation blocks from roof of Celsius First	537764	184884
17/05/2007	17607472	N		University of East London accommodation blocks from roof of Celsius First	537764	184884
17/05/2007	17607473	SW	YYJ015, EDFE108	Deviation transmission towers and the Millennium Dome	537748	184880

17/05/2007	17607474	SW	YYJ015, EDFE108	Deviation transmission towers and the Millennium Dome	537748	184880
17/05/2007	17607475	SW		Canary Wharf from the roof of Celsius First	537805	184814
17/05/2007	17607476	SW	YYJ014	Deviation transmission tower	537805	184814
17/05/2007	17607477	SW	YYJ014	Deviation transmission tower	537805	184814
17/05/2007	17607478	S	YYJ013	Intermediate transmission tower in Celsius First car park	537805	184814
17/05/2007	17607479	W		Channel Tunnel rail link	537805	184814
17/05/2007	17607480	W		Channel Tunnel rail link	537805	184814
17/05/2007	17607481	SW	YYJ013	Intermediate transmission tower in Celsius First car park	537917	184907
17/05/2007	17607482	SW	YYJ013	Intermediate transmission tower in Celsius First car park	537917	184907
17/05/2007	17607483	N	YYJ013	Intermediate transmission tower in Celsius First car park	537932	184918
17/05/2007	17607484	N		Height restriction bar, formerly positioned beneath YYJ013	537986	184991
17/05/2007	17607485	N		Height restriction bar, formerly positioned beneath YYJ013	537986	184991
17/05/2007	17607486	SSW	YYJ013	HMS Meats, in Celsius First compound	537986	185007
17/05/2007	17607487	E	EDFE110, YYJ016	Transmission towers. EDFE110 is associated with sub station	537797	183976
17/05/2007	17607488	SE	EDFE111	Deviation transmission tower on banks of City Mill River	537797	183976
17/05/2007	17607489	SE	EDFE111	Deviation transmission tower on banks of City Mill River	537797	183976
17/05/2007	17607490	E	YYJ017	Intermediate transmission tower	537799	183974
17/05/2007	17607491	E	YYJ017	Intermediate transmission tower	537799	183974
17/05/2007	17607492	N	EDFE109	Intermediate transmission tower and shed off Marshgate Lane	537799	183974
17/05/2007	17607493	N	EDFE109	Intermediate transmission tower and shed off Marshgate Lane	537799	183974
17/05/2007	17607494	E	EDFE110	Transmission tower. EDFE110 is associated with sub station	537773	183945
17/05/2007	17607495	E	EDFE111	Deviation transmission tower	537773	183945
17/05/2007	17607496	E	EDFE111	Deviation transmission tower	537773	183945

14 Appendix 5: OASIS Report Form

OASIS ID: molas1-35878

Project details

Project name	Overhead power transmission lines and associated structures in the Lower Lea Valley
Short description of the project	A built heritage assessment and photographic survey was carried out of the overhead power transmission lines and their associated structures in the Lower Lea Valley, prior to the removal of the transmission towers, or pylons, and the underground diversion of the power lines. Overhead transmission lines were first erected in the Lower Lea Valley in 1953, as part of a 132kV line transmitting electricity from Brimsdown power station in Enfield, to Brunswick Wharf power station, which was adjacent to East India Dock Basin. Parts of this transmission network were reused when two new overhead transmission lines were installed in 1971; a 275kV line and a 132kV diversion for local electricity supply, which both ran from West Ham power station to Hackney substation; the earlier transmission towers have since been renewed. The placement of the transmission towers in the landscape broadly followed the 'Holford Rules', a set of guidelines drawn up by the National Grid in the 1950s which dictated the placement of pylons, and ensured they would be situated in visually unobtrusive places, such as valleys and industrial corridors in towns and cities. Subsequent National Grid planning guidelines restricted the nature of development around electricity transmission networks. A series of site visits resulted in the comprehensive photography of the transmission towers, substations, associated landscape and their setting in the landscape, an appropriate level of recording for structures of a well-known type for which existing documentation is in other respects adequate.
Project dates	Start: 01-03-2007 End: 31-05-2007
Previous/future work	Yes / Yes
Any associated project reference codes	OL-01207 - Sitecode
Type of project	Building Recording
Site status	Conservation Area
Site status (other)	Part of study area was in a Conservation Area

Current Land use	Grassland Heathland 3 - Disturbed
Current Land use	Industry and Commerce 1 - Industrial
Current Land use	Industry and Commerce 4 - Storage and warehousing
Current Land use	Open Fresh Water 1 - Running water
Current Land use	Open Fresh Water 2 - Standing water
Current Land use	Other 1 - Allotment
Current Land use	Other 11 - Thoroughfare
Current Land use	Other 13 - Waste ground
Current Land use	Vacant Land 3 - Despoiled land (contaminated derelict and ?brownfield? sites)
Monument type	ELECTRICITY PYLON Modern
Monument type	ELECTRICITY SUB STATION Modern
Methods & techniques	'Photographic Survey'
Prompt	Direction from Local Planning Authority - PPG15

Project location

Country	England
Site location	GREATER LONDON NEWHAM NEWHAM Overhead power transmission network in the Lower Lea Valley
Site location	GREATER LONDON WALTHAM FOREST WALTHAM FOREST Overhead power transmission network in the Lower Lea Valley
Site location	GREATER LONDON HACKNEY HACKNEY Overhead power transmission network in the Lower Lea Valley

Study area	15.00 Kilometres
Site coordinates	TQ 535700 186400 50.9461402053 0.186345361025 50 56 46 N 000 11 10 E Line
Site coordinates	TQ 539000 182100 50.9421876515 0.190858118810 50 56 31 N 000 11 27 E Line

Project creators

Name of Organisation	MoLAS/PCA
Project brief originator	Greater London Archaeology Advisory Service
Project design originator	MoLAS/PCA
Project director/manager	Nick Bateman
Project director/manager	Kieron Tyler
Project supervisor	Emma Dwyer
Type of sponsor/funding body	London Development Agency (LDA)

Project archives

Physical Archive Exists?	No
Digital Archive recipient	LAARC
Paper Archive recipient	LAARC

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Overhead Power Transmission Lines and Associated Structures in the Lower Lea Valley
Author(s)/Editor(s)	Dwyer, E
Date	2007
Issuer or publisher	MoLAS-PCA
Place of issue or publication	London
Description	Built heritage assessment and photographic survey
Entered by	Emma Dwyer (edwyer@molas.org.uk)
Entered on	19 December 2007

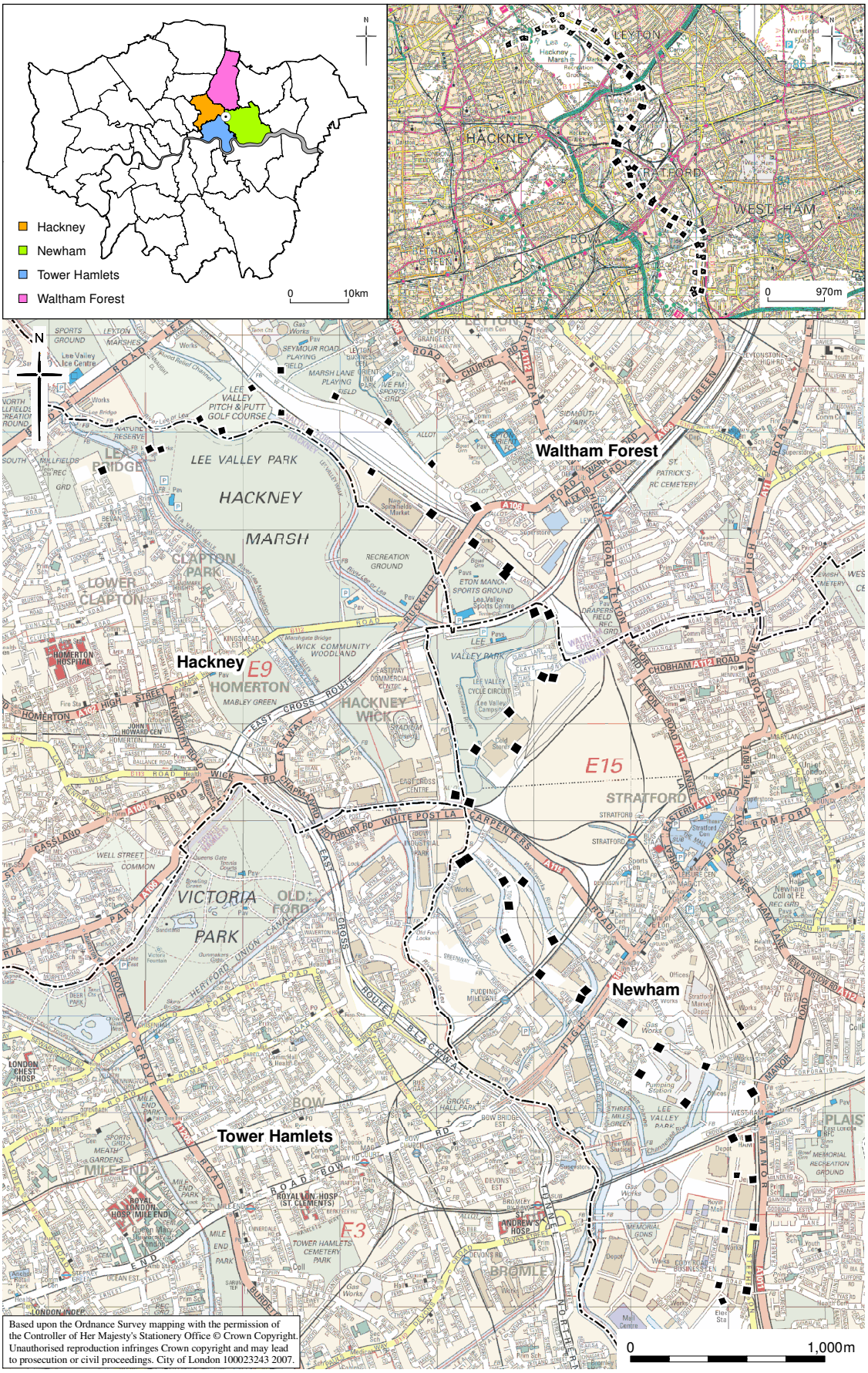

Fig 1 Location plan

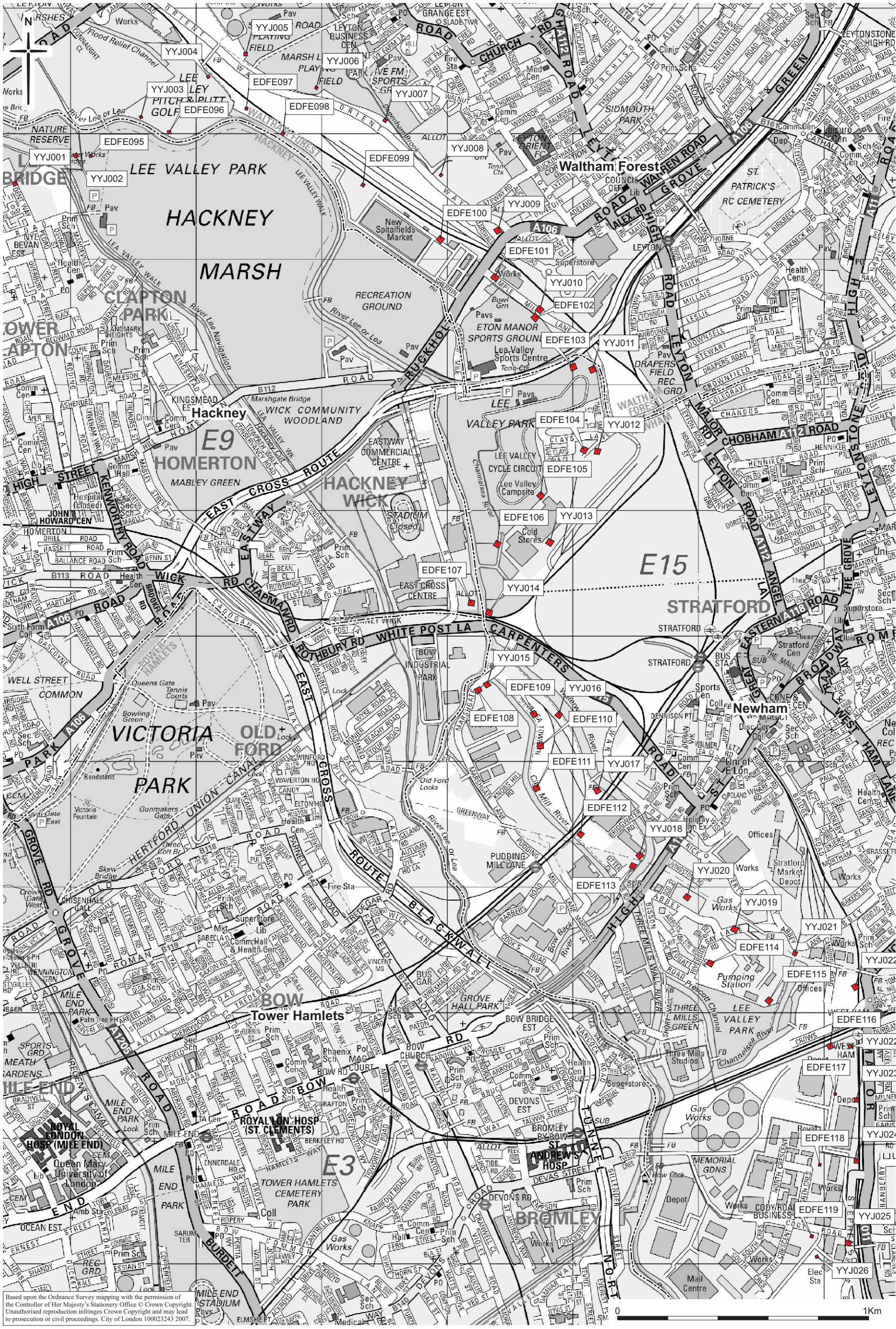

Fig 1b National Grid (YYJ) and EDFE transmission towers

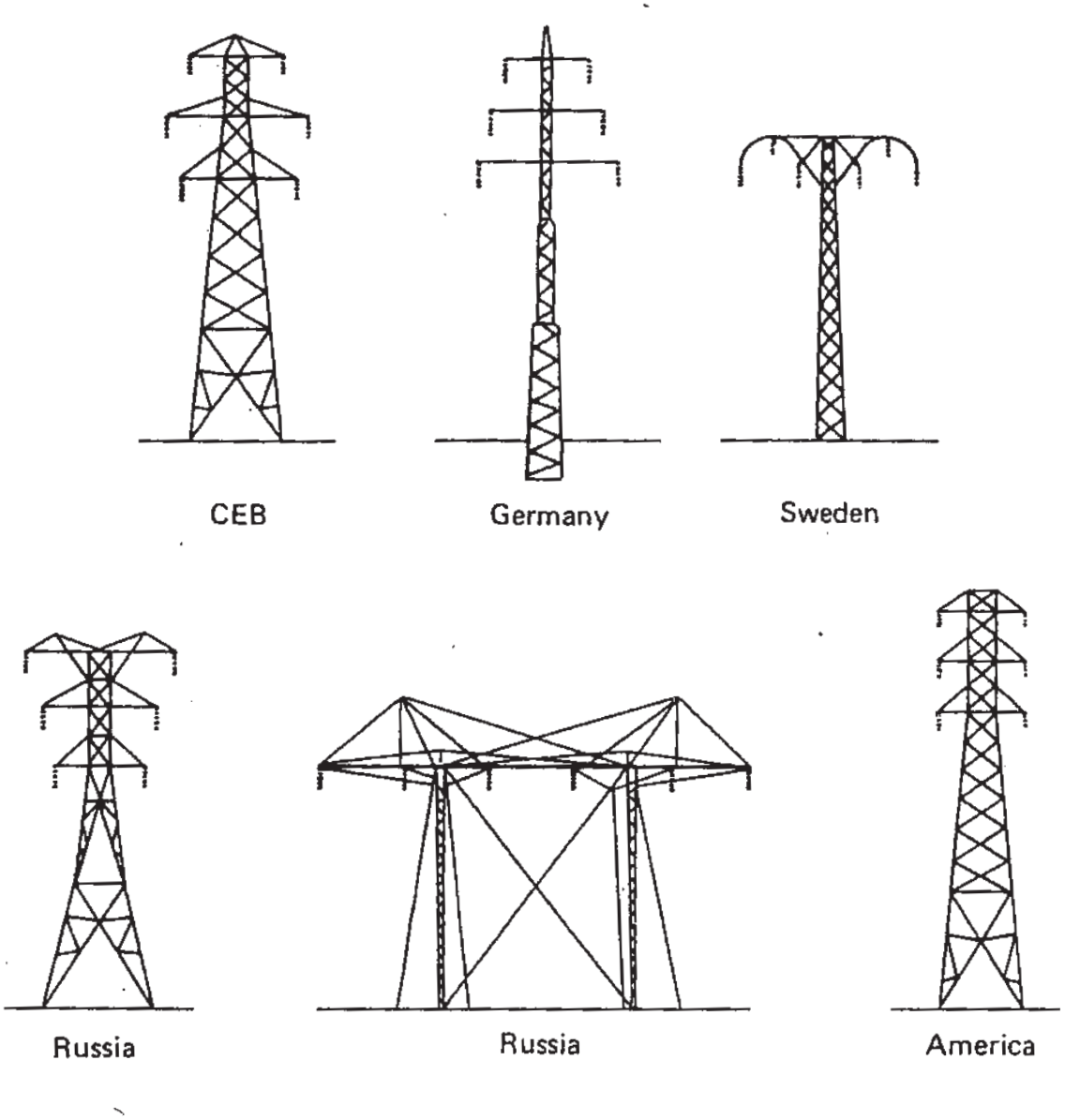

Fig 2 National designs of double-circuit pylons (Hannah 1979, 117)

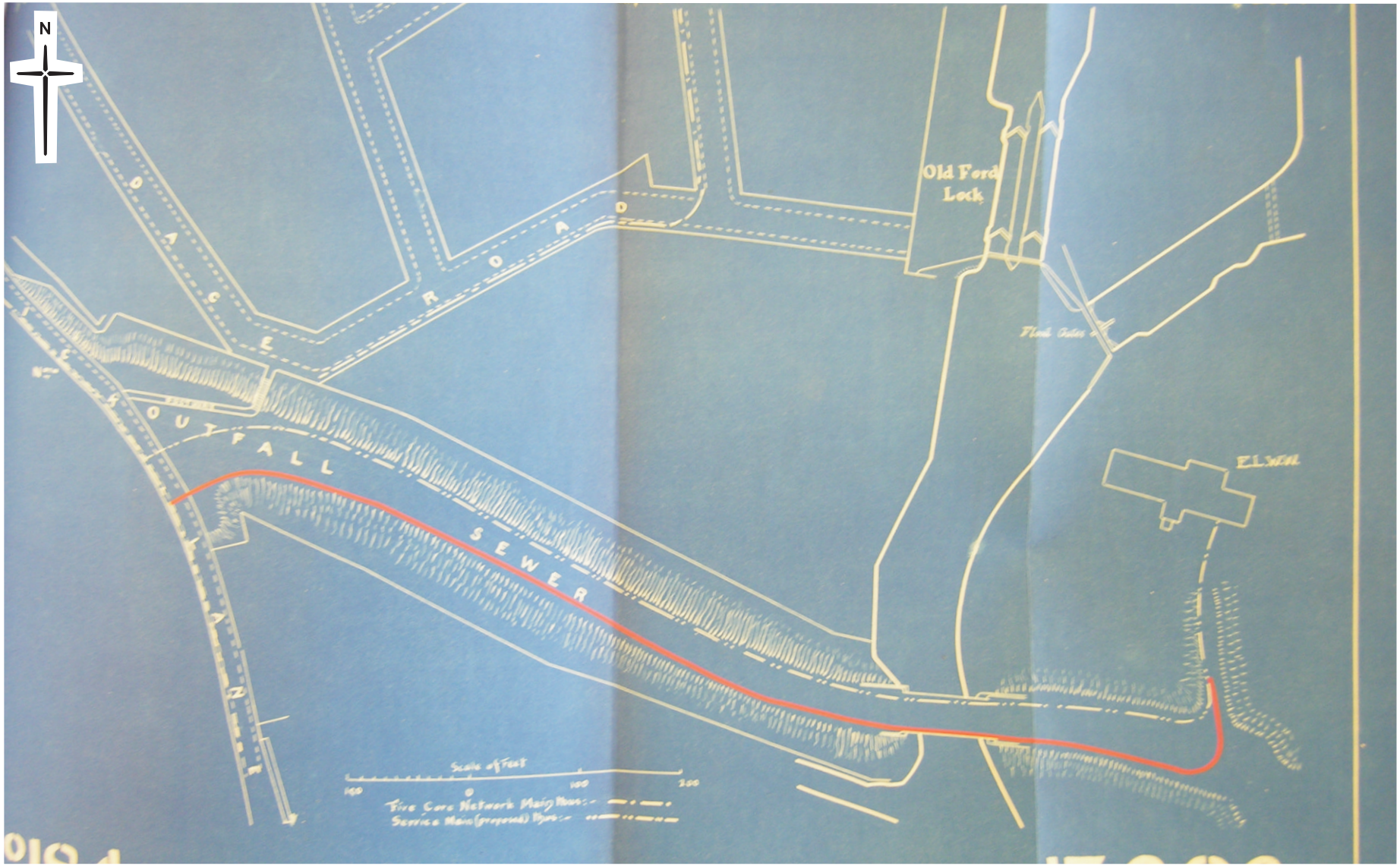

Fig 3 The electricity supply to the East London Water Works, 1903 (LMA: ACC/2558/MW/SU/01/033/1690)

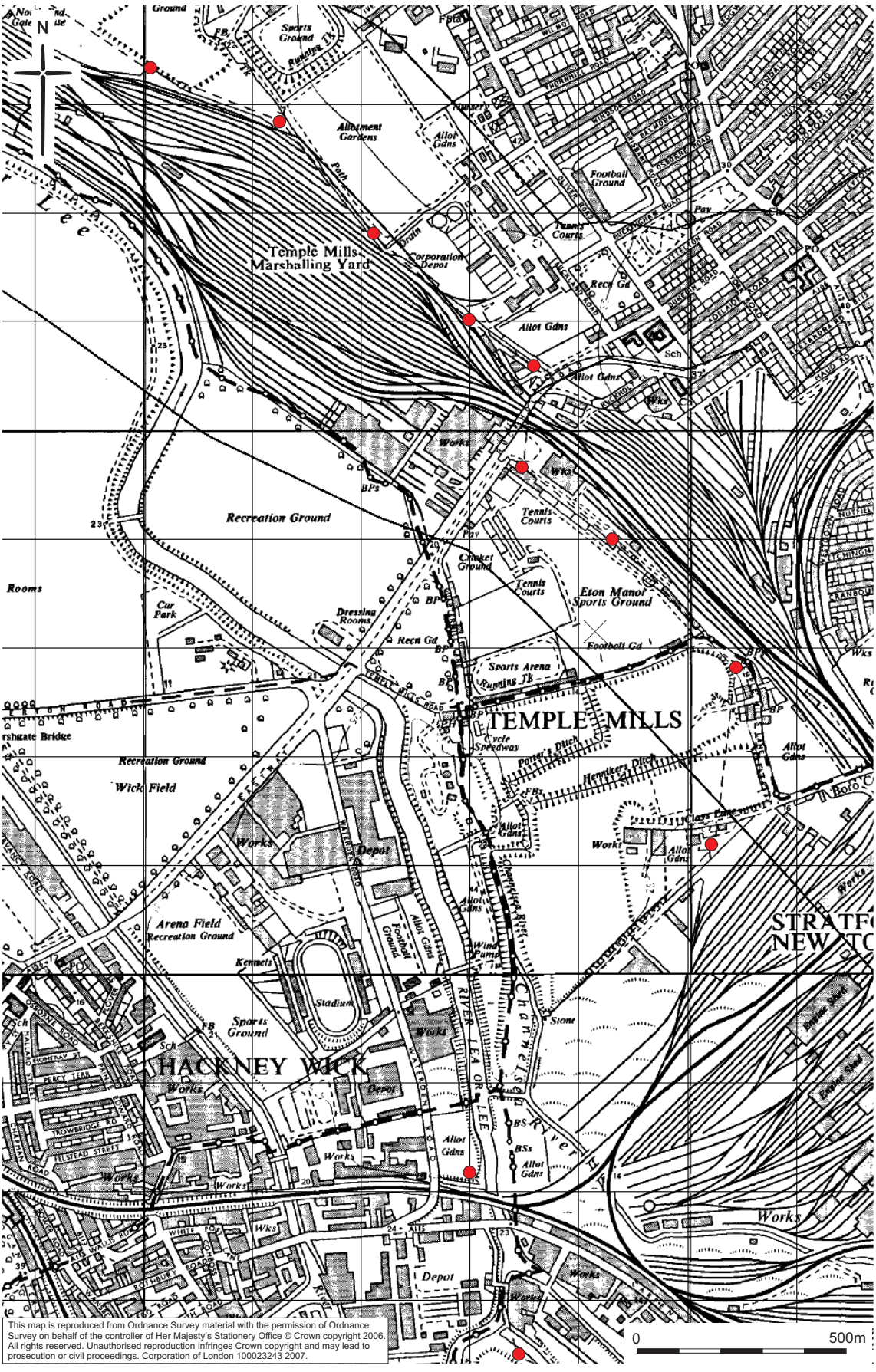

Fig 4 Ordnance Survey plan of Temple Mills, 1968

Fig 5 Ordnance Survey plan of Stratford Marsh, 1965

Fig 6 Ordnance Survey plan of Mill Meads, 1965

Fig 7 Existing 132, 66 and 22kV circuits in the London area (London Electricity Board, 1953)

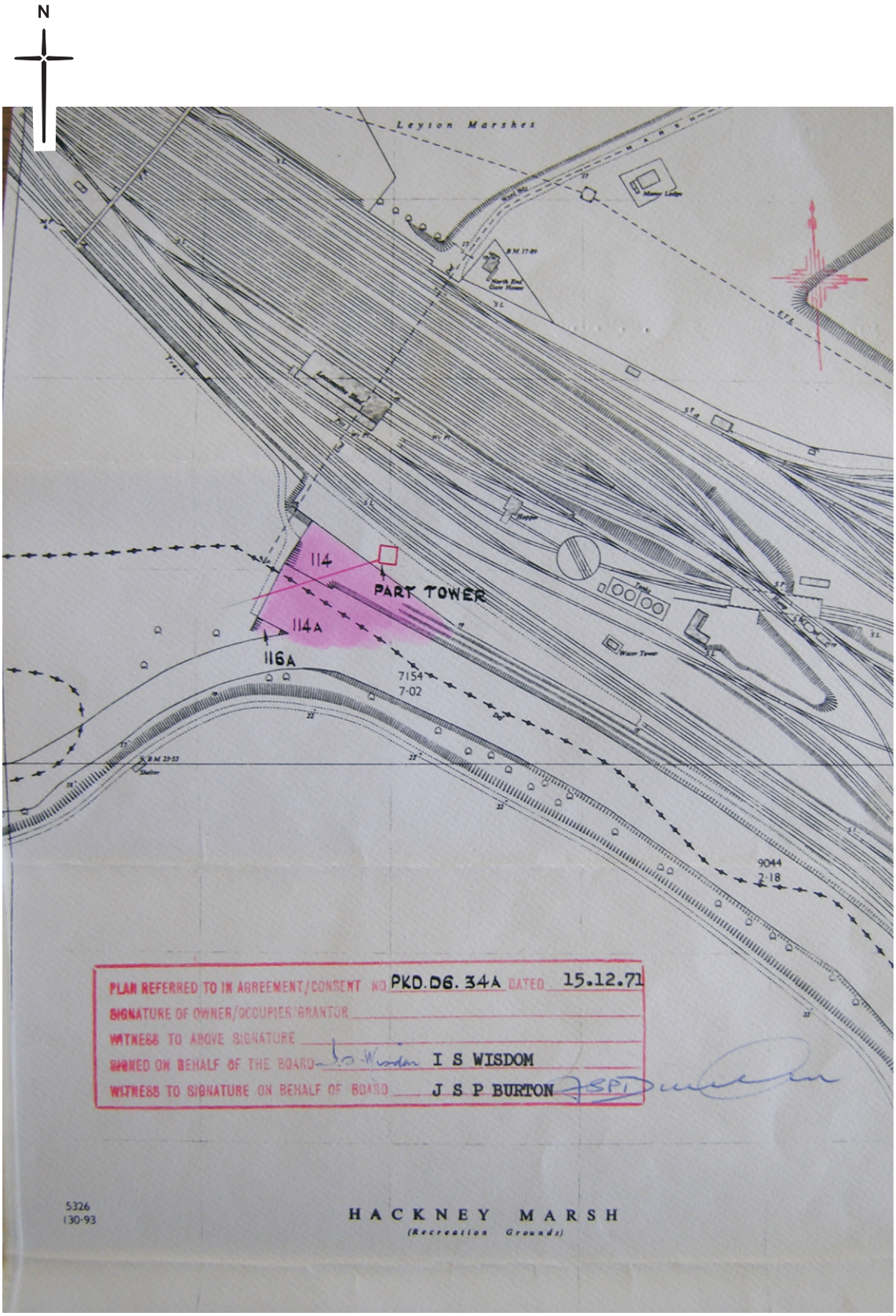

Fig 8 Part of a transmission tower and power line situated on Lee Conservancy Board land on the northern side of Hackney Marsh (LMA: ACC/2558/LC/03/3305)

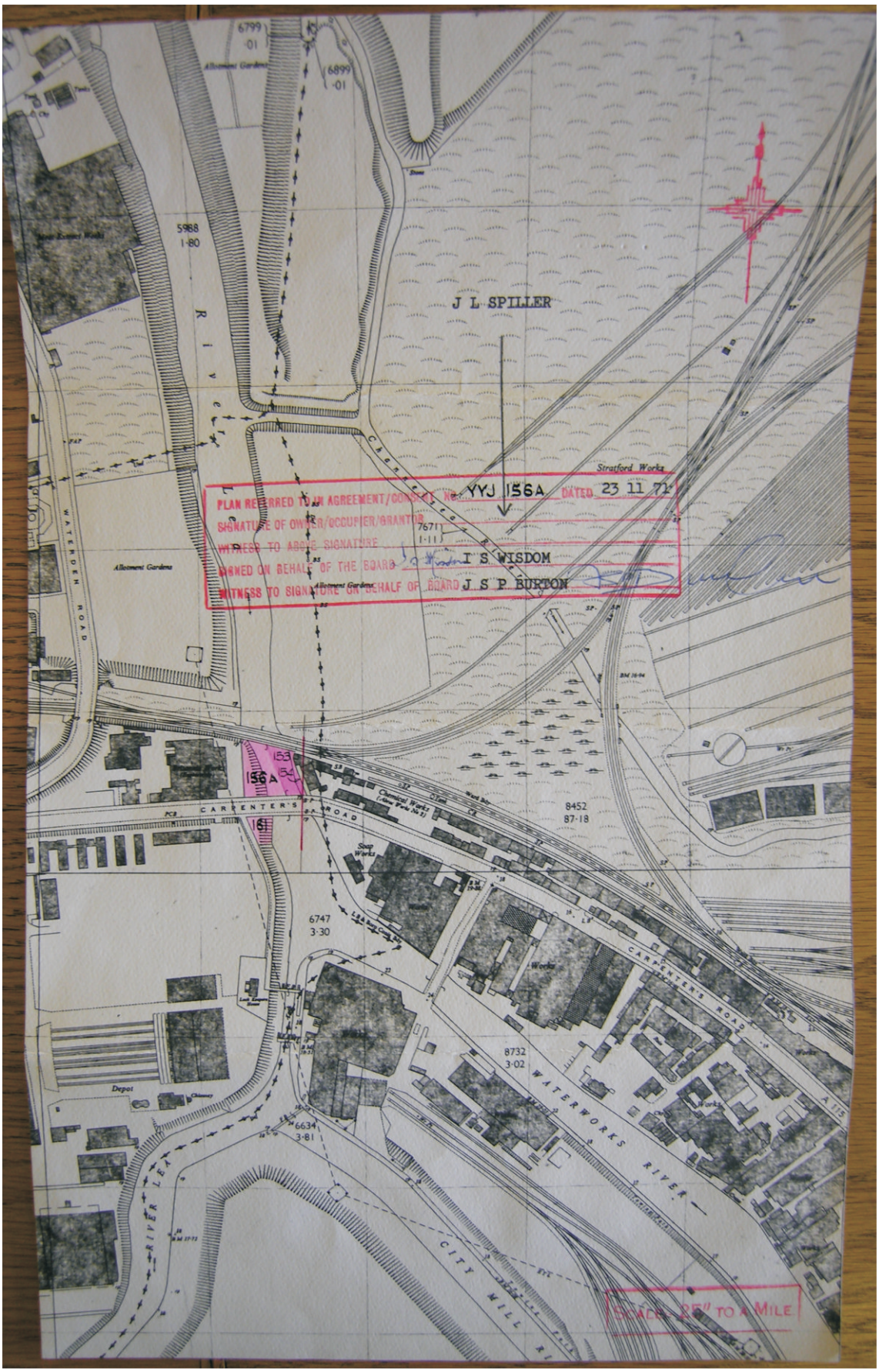

Fig 9 A power line (now National Grid) crossing Lee Conservancy Board land on the northern side of Carpenter's Road (LMA: ACC/2558/LC/03/3306)

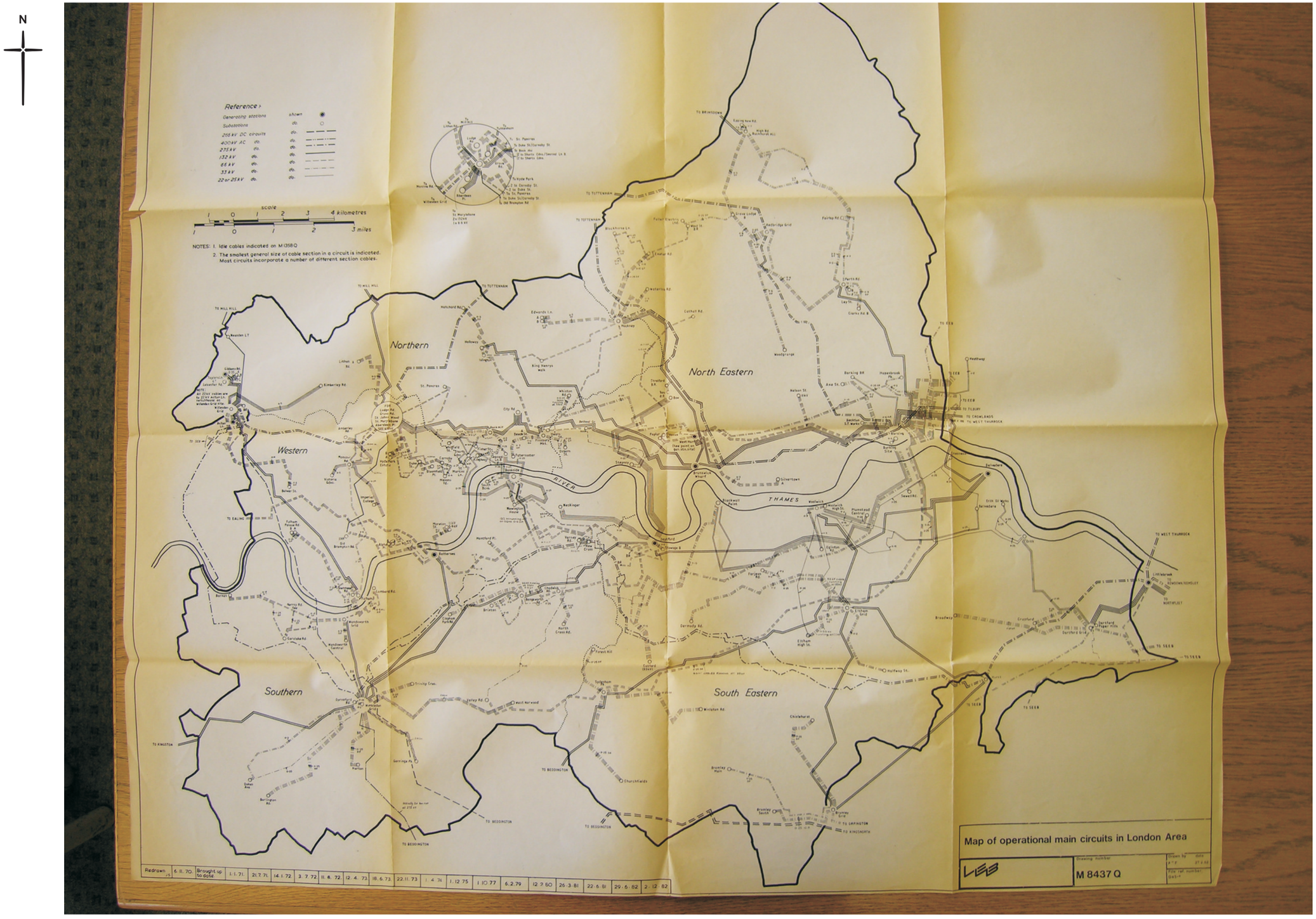

Fig 10 Operational main circuits in the London area (LMA/4278/02/167)

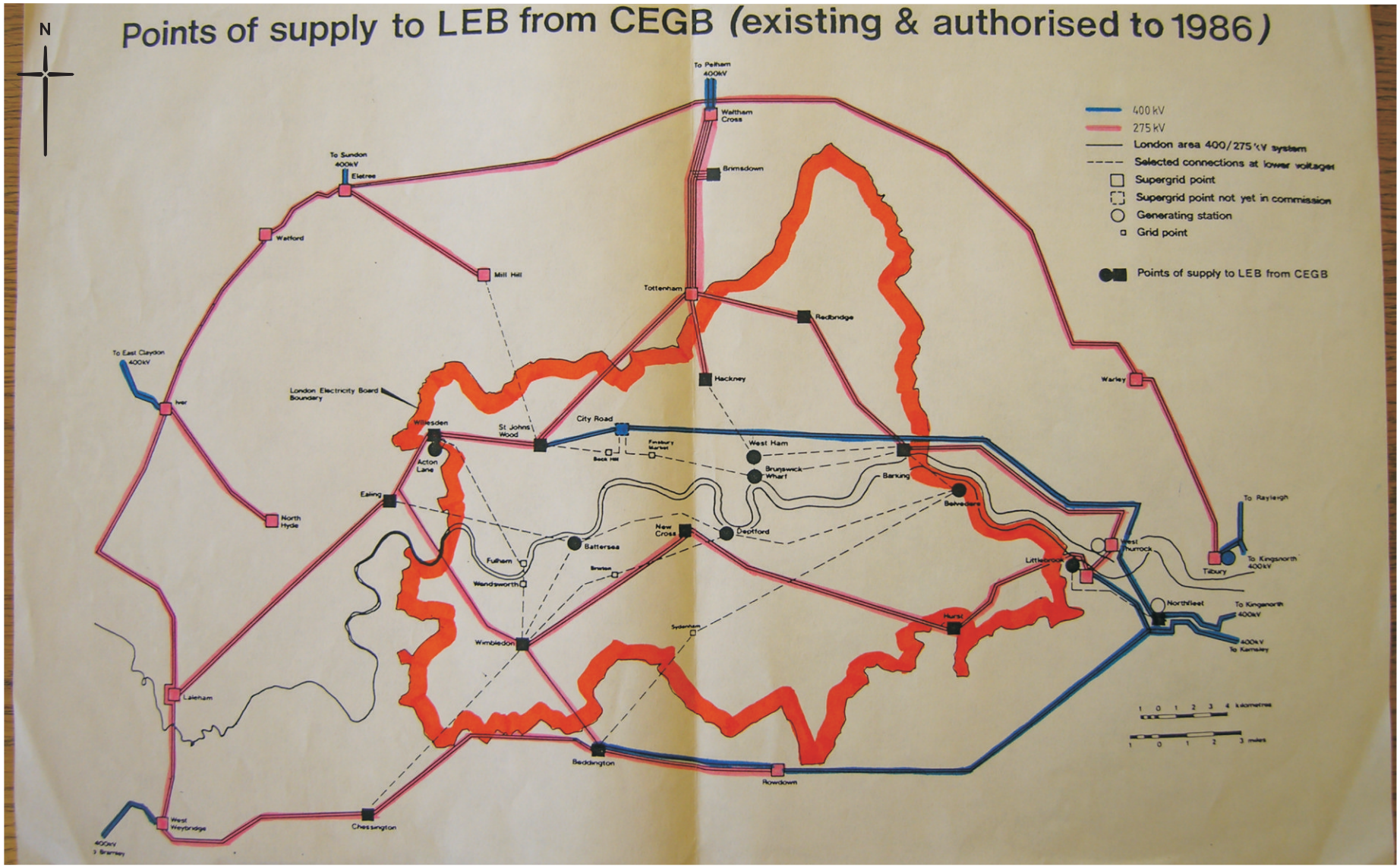

Fig 11 Points of supply to the London Electricity Board from the Central Electricity Generating Board, 1986 (LMA/4278/02/167)

Fig 12 Suspension tower YYJ009. Looking east

Fig 13 Deviation tower YYJ025 at the Pylon Trading Estate, Cody Road. Looking north-west

Fig 14 Terminal towers at the electricity substation in Denton Way. Pylon YYJ001 is on the right. Looking east

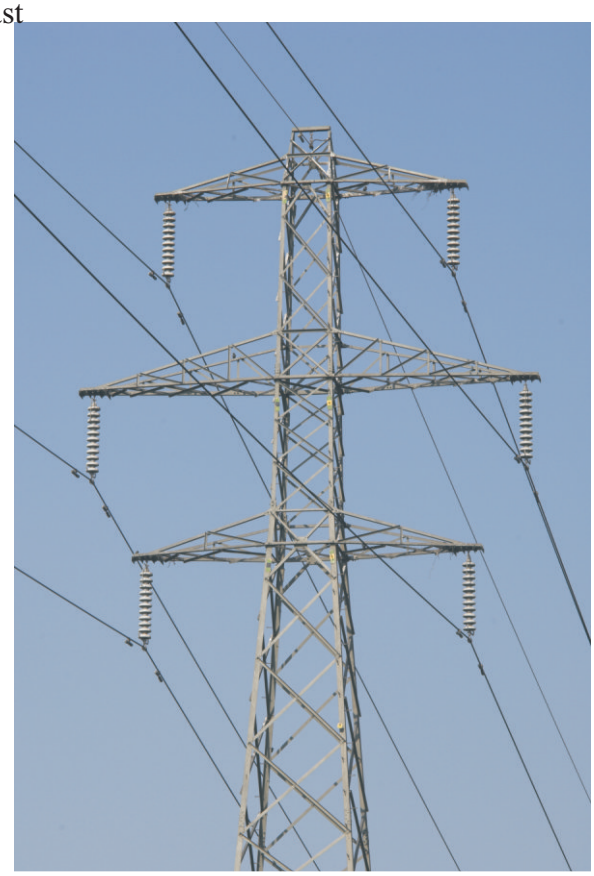

Fig 15 The arrangement of cross arms on suspension tower, EDFE100. Looking north-east

Fig 16 Pylon EDFE113, erected in 1971 with extensions to the upper cross arms. Looking south-east

Fig 17 Deviation tower EDFE104, which incorporates shorter cross arms on the north western side. Looking north-east

Fig 18 Ceramic insulators on suspension tower EDFE099

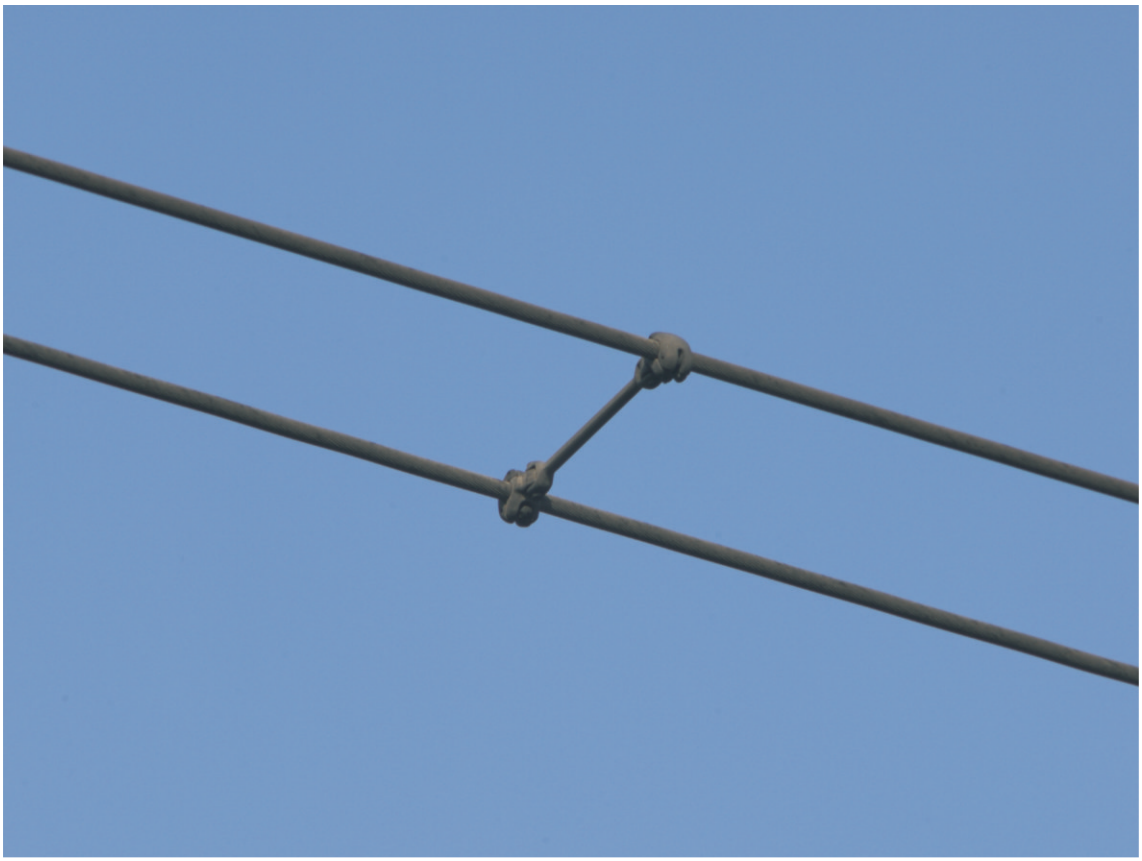

Fig 19 A spacer separating the conductors between pylons YYJ006 and YYJ007

Fig 20 The ladder and harness in use during the erection of a temporary pylon in Temple Mills Lane in June 2007. Looking north

Fig 21 A log of grounds maintenance work carried out in the sealing end compound of terminal tower EDFE114

Fig 22 Examples of the transformers at West Ham substation

Fig 23 Circuit switching equipment at West Ham substation

Fig 24 The secure compound at Hackney substation. Looking east

Fig 25 The 132kV power line is carried over the River Lea by a self-contained steel bridge; the line is then buried before resurfacing in the sealing end compound of EDFE095. Looking north-west

Fig 26 Terminal tower EDFE095 and its sealing end compound on Hackney Marsh. Looking north-east

Fig 27 Terminal towers at Hackney substation visible from Caldecott Way. Looking north-east

Fig 28 The view of the Terminal towers from Denton Way. Looking north

Fig 29 The 'wirescape' visible at the northern end of Hackney Marsh. Looking north

Fig 30 The National Grid and EDF overhead power lines visible on the eastern horizon of Hackney Marshes

Fig 31 National Grid transmission tower VC017, adapted for use as a boxing ring for the film 'The Games' (©Hilary Powell, Optimistic Productions)

Fig 32 A still from the film 'The Games' (©Hilary Powell, Optimistic Productions)

Fig 33 The National Grid and EDF overhead power lines visible from New Spitalfields Market. Looking north

Fig 34 The area around the base of EDFE100, used as a propane and pallet store. Looking north-west

Fig 35 National Grid overhead power lines visible from a waste disposal compound in Orient Way, Leyton. Looking south-east

Fig 36 National Grid and EDF overhead power lines visible from the Auckland Road allotments. Looking south east

Fig 37 National Grid and EDF overhead power lines visible from the Clays Lane Housing Cooperative. Looking east

Fig 38 National Grid and EDF overhead power lines visible from the former Eastway Cycle Track. Looking south

Fig 39 Transmission tower YYJ013, formerly used as the entrance gate to the car park at Celsius First cold storage facility in Cody Road. Looking north east

Fig 40 The office of HMS Meats, and transmission tower YYJ013, at Celcius First cold storage facility. Looking south west

Fig 41 The 'wirescape' visible over the railway bridge crossing the City Mill River. Looking north

Fig 42 National Grid and EDF overhead power lines visible from the Northern Outfall Sewer, where it crosses Marshgate Lane. Looking north

Fig 43 The 'wirescape' visible at the point where the Northern Outfall Sewer meets the railway line west of Stratford. Looking east

Fig 44 The 'Greenway' footpath along the top of the Northern Outfall Sewer. Looking south east

Fig 45 The entrance to the 'Greenway' footpath, north of Stratford High Street, and transmission towers EDFE113 and YYJ018. Looking north west

Fig 46 The entrance to the 'Greenway' footpath, south of Stratford High Street, and the National Grid overhead power lines

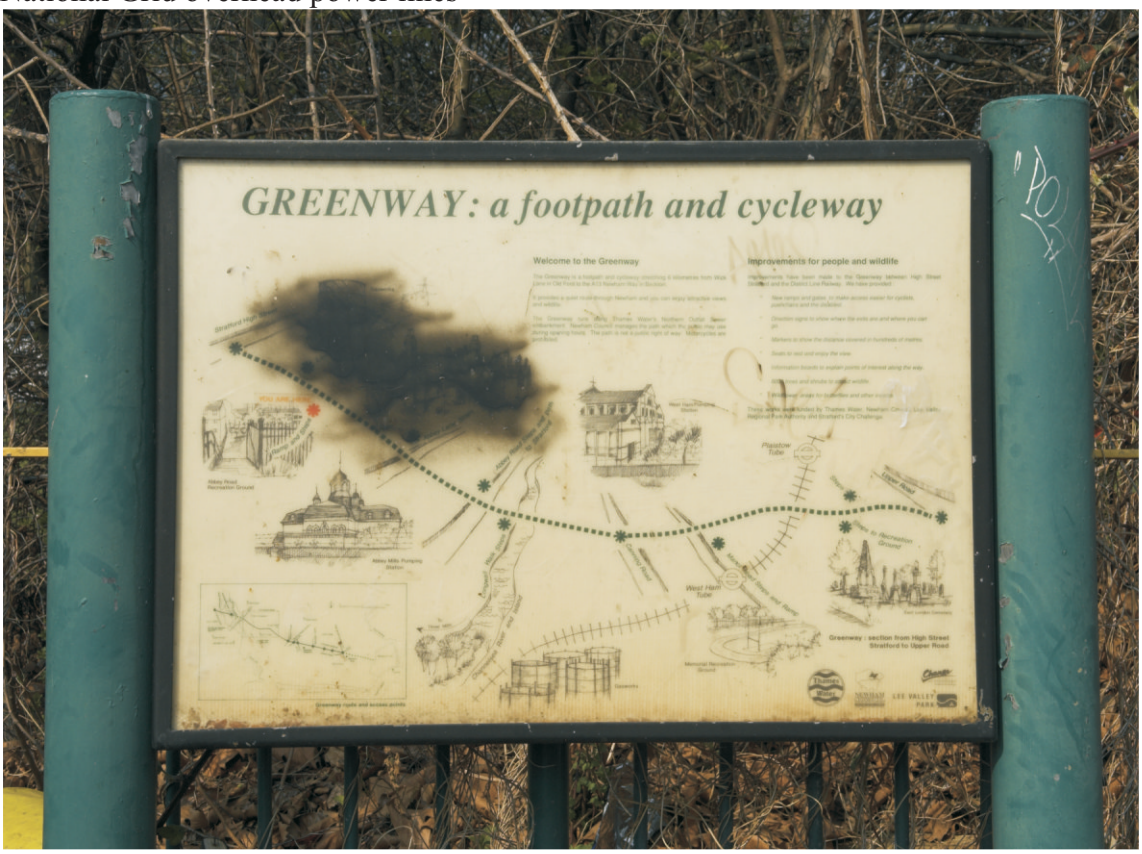

Fig 47 Information board for the 'Greenway'; the transmission towers are conspicuous by their absence from the map

Fig 48 A sundial, designed by Artist Kate Williams, marking the point where the Greenwich Meridian crosses the 'Greenway' footpath. Looking west

Fig 49 The National Grid overhead power line on the south-western side of the Northern Outfall Sewer. Looking south east

Fig 50 'The Snail', part of a redundant turbine now serving as a piece of public art adjacent to the 'Greenway' footpath along the Northern Outfall Sewer. Looking north east

Fig 51 The bridge carrying the Northern Outfall Sewer over the Channelsea River, and transmission tower YYJ021. Looking north east (MoLAS

Fig 52 A children's playground in the shadow of transmission tower YYJ019. Looking north

Fig 53 Transmission tower YYJ020 adjacent to housing in Abbey Lane. Looking west

Fig 54 Fly tipping near transmission tower YYJ020. Looking north west

Fig 55 The EDF overhead power line, visible behind Abbey Mills Pumping Station. Looking south west

Fig 56 Terminal tower EDFE114, in the grounds of Abbey Mills Pumping Station. Looking north

Fig 57 The Pylon Trading Estate, Cody Road, West Ham

Fig 58 Deviation tower YYJ025, incorporated into the car park of the DHL distribution compound, Cody Road. Looking south

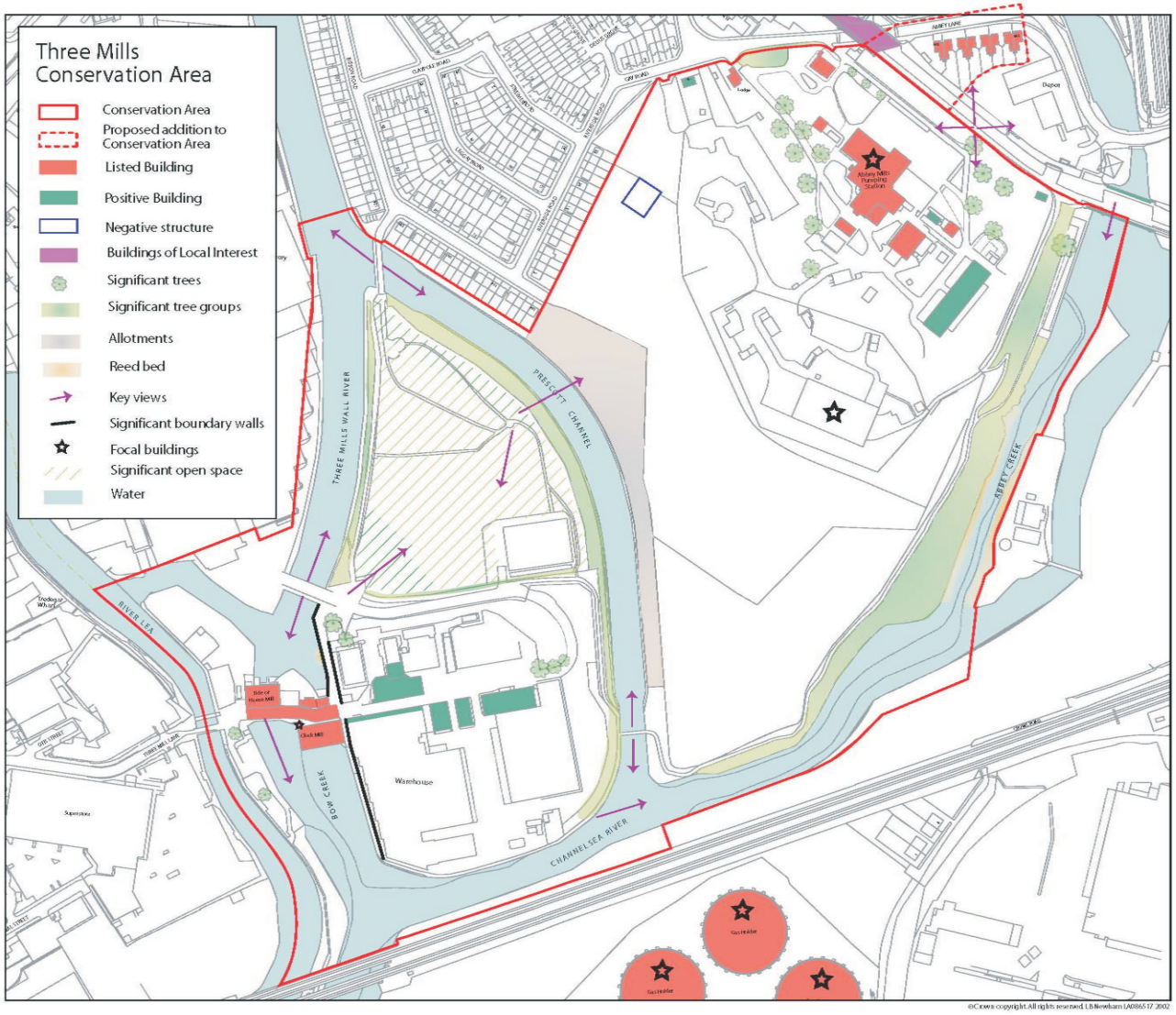

Fig 59 Map of the Three Mills Conservation Area. (London Borough of Newham, 2006)

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