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HERITAGE STATEMENT

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APPENDICES

EXECUTIVE SUMMARY

(i) This report has been produced on behalf of the Victoria Square Management Company to accompany the application submission to the London Borough of Camden (LB Camden) in respect of the redevelopment of 44-44a Gloucester Avenue, NW1. It is specifically to address national and local planning policy on the historic environment.

(ii) The proposals involve the refurbishment and part redevelopment of buildings identified as making a positive contribution, sited within the Primrose Hill Conservation Area, and in the vicinity of two listed buildings (Grade II).

(iii) The description of the development is:

> *'The demolition of buildings identified as number 2 at the northwest corner of the site and number 4 at the eastern corner of the site to provide a new ground plus 5 upper storey building along the north west part of the site and a ground plus 2 upper storey building at the eastern corner and refurbishment of the existing building on site to create 40 residential units, employment floor area (Use Class B1a) car parking and landscaping within the courtyard and ancillary works'.*

(iv) The redevelopment of the site was previously granted planning permission and conservation area consent in March 2012 following an appeal (APP/X5210/E/11/2161889 and APP/X5210/A/11/2161885). The Appeal Decision is reproduced at **Appendix 9.0**.

(v) In 2012 conservation area consent was granted for the demolition of Buildings 2 and 4. Under the terms of Section 63 and Schedule 17 of the Enterprise and Regulatory Reform Act 2013, it is no longer necessary to apply for conservation area consent for the demolition of buildings in conservation areas. Consent for demolition in conservation areas is now applied for with planning permission.

(vi) The Inspector established important principles for the redevelopment of the site, including the acceptability of the demolition of Buildings 2 and 4 and redevelopment of the site with residential and office uses. These principles have informed the current application.

(vii) The client has reviewed the market interest in the consented scheme and had decided to revisit the mix of uses. See the Planning Statement for information.

(viii) The proposed change in the balance of the uses has also been informed by the Government's introduction of conversion of offices to residential use under permitted development. A separate application for the conversion of the existing offices to residential has been submitted to the Council (2014/7701/P).

(ix) The proposed design changes to the consented scheme are relatively minor and result from the change in the balance of the proposed uses. The changes address concerns that officers at LB Camden has about the design of the consented scheme.

History and Significance of the Site

(x) The site was first developed by the Electric Telegraph Company in 1858. The Post Office acquired the site in 1870 and constructed more buildings. The buildings have an industrial character and are sited around a central cobbled courtyard and are bounded on the northern side by the West Coast Main Line. A summary of the historic development of the site is provided in Section 2.0.

(xi) The site consists of the following:

- Building 1, the main frontage building, a three storey warehouse constructed by the Post Office in 1870. It incorporates an archway in the centre of the elevation which leads through to the courtyard to the north;
- Building 2, originally a store and van shed constructed after 1877 by the Post Office, partially infilling the courtyard.
- Building 3, a factory range constructed by the ETC in 1858, along the northern boundary of the site abutting the railway tracks. The courtyard elevation is heavily altered.
- Building 4, originally a smithy range constructed as part of the factory range by the ETC in 1858.
- Building 5, the double fronted 2 storey house (No.44A), which fronts Gloucester Avenue, built as a house in 1858, probably for the ETC site manager or chief engineer.

The location of the buildings is shown on the plan in **Appendix 4.0.**

(xii) The Primrose Hill Conservation Area Statement identifies that the site makes a positive contribution to the character and appearance of the area. The appeal decision concurs with this assessment, but recognises that the buildings do not all contribute equally.

(xiii) Section 3.0 provides an assessment of the significance of the buildings and the contribution that they make to the Primrose Hill CA. We conclude:

- Buildings 1 and 5 make a significant contribution to CA.
- Building 4 is a very utilitarian structure of no aesthetic or townscape merit.
- Buildings 2 and 3 are of some interest by virtue of their industrial character and materials; however, their position and modest architectural qualities/extent of rebuilding limit their contribution to the CA.

Scheme Assessment

(xiv) Section 5.0 of the report provides an assessment of the proposals, focusing on the changes to the consented scheme. Since consent was granted the Government's

national planning policy has been updated and PPS5 replaced with the NPPF. The assessment therefore provides an assessment against the current planning policies.

Demolitions

(xv) Conservation area regulation is usually concerned with changes that can be appreciated from public vantage points. The buildings within the complex proposed for demolition, Buildings 2 and 4, are not widely visible from the street and even then only in passing views. The loss of these buildings will therefore have only a very limited effect on the character or appearance of the CA.

(xvi) The buildings proposed for demolition can be seen from limited publicly accessible areas outside the CA, in particular from passing trains and the carparks to the north and east of the cutting. These are low quality viewpoints. The appeal decision recognises that these are not important views into the CA and are not identified in the CA Statement. Our assessment is that there would no material harmful effect from these locations as a result of the demolition or the redevelopment. The Inspector agreed (para 12).

(xvii) The courtyard form of the complex makes a positive contribution to the CA, but the proposals do not materially change its proportions or the way it is perceived from the street.

(xviii) We also conclude that the site's wider historical associations will not be materially affected by the proposals.

(xix) The Inspector concluded that there would be some limited harm to the CA as a result of the demolition, which was 'less than substantial'. This harm therefore needs be considered against the benefits of the development, which the Inspector recognised includes the nature of the replacement building (para 10).

Replacement Buildings

(xx) The judgement on Section 72(1) comprises the totality of the building operation, including both the demolition and redevelopment. Therefore we now consider the design of the replacement buildings.

(xxi) The Inspector concluded that the consented replacement buildings would 'be, at worst, neutral' (para 16), which in effect would preserve the character and appearance of the CA.

(xxii) The proposed new buildings would be visible over a small area within the CA, and then mostly from the private land comprising the courtyard:

- The location of the development, set back from the frontages, means there is limited visibility from the street.

- The scale of development is generally comparable to height of nearby buildings.
- The development's character is based upon traditional building forms (orthogonal gabled structures).
- The development's plot pattern or grain is consistent with the existing pattern on the site.
- The development's detailing and materials are consistent with the complex and complementary with the surrounding area (stock brick, slate and elevations treated as masonry elements into which openings have been formed).
- The development's uses, residential and employment are consistent with this part of the conservation area.

(xxiii) The proposed changes to the consented design are minor and, in our judgement, do not give rise to any materially different effect on the character or appearance of the CA, with the exception of the landscape improvements which are an improvement on the consented scheme:

- The adjustments in the proportion of office to residential use will not have a material effect on the character or appearance of the CA.
- The slightly larger rear extension to Building 1 to accommodate a stair and lift core will not be visible from publicly accessible spaces in the CA.
- The roof of Building 1 is behind a parapet so the proposed roof lights will not be visible from the CA (see the verified views).
- The single-storey increase in scale of replacement Building 2 and changes to its massing will likewise have no materially greater effect on the CA.
- The south side of Building 3 can be glimpsed in views from the street between Buildings 1 and 5, and though the opening in Building 1 (to a much lesser extent). The adjustments in the pattern of fenestration and doors are minor details and ones that we consider will enhance this elevation but will not have a materially different effect on the character and appearance of the CA than the consented scheme.
- The single-storey link structure between Buildings 4 and 5 proposed in the consented scheme may have been glimpsed from the street. It is now proposed that this area should be private amenity space enclosed by railings. The effect of this change on the CA is minor, although it will mean that Building 5's origin as a separate house is clearer.
- The landscaping improvements, including the introduction of soft landscaping and planting of trees, will be glimpsed from the street in the gaps between Building 1 and 5, and will have a minor beneficial effect on the character and appearance of the CA, an improvement on the consented scheme.

Countervailing Benefits

(xxiv) The Inspector concluded that the net effect of the demolition and redevelopment in the consented scheme would cause some 'limited harm' to the character and appearance

of the CA, and that this would be less than substantial (para 13). The current application proposes to demolish the same buildings and the changes to the design of the replacement buildings are minor and would not change this conclusion.

(xxv) Paragraph 134 of the NPPF requires decision-makers to balance the harm to heritage assets against the public benefits of the scheme.

(xxvi) Before undertaking this exercise, in light of the Barnwell judgement and the statutory provision, we acknowledge that any harm to the CA is a matter of considerable importance and weight. We also note that the Barnwell judgement (in paragraph 128) and NPPF (paragraph 132) state that the strong presumption against allowing development which causes harm to a listed building or conservation area lessens in weight as the importance of the heritage asset decreases and if the harm is less than substantial rather than substantial, and again if the harm in on the 'limited' end of the scale as the Inspector concluded in this case.

(xxvii) We note that the corollary of this is that any works that benefit or enhance the character and appearance of the CA are also a matter of considerable importance and weight.

(xxviii) There are two kinds of countervailing benefits of the scheme: heritage benefits and general land use planning benefits.

(xxix) The heritage benefits include:

- The refurbishment and restoration of No. 44A (Building 5), a derelict building dating from 1858, the first phase of the development of the site. The Inspector concluded that these works, also included as part of the consented scheme, would be: 'a significant benefit to the streetscene and wider area as it is currently unused and visually unattractive' (para 11, first bullet point).
- The reuse and refurbishment of the factory range of 1858 (Building 3), which will enhance the CA, albeit to a limited extent due to its limited visibility. The Inspector concluded that these works 'would improve its appearance and safeguard its future as a feature of views into the courtyard from the road' (para 11, third bullet point).
- The reuse and restoration of Building 1 to secure its long term viable use and enhance the CA. The Inspector concluded that these works 'would secure its beneficial use as a positive feature of the area' (para 11, second bullet point).
- Landscape enhancements to the courtyard. The Inspector concluded that these would enhance the appearance of the courtyard (para 11, last bullet point).

(xxx) The Planning Statement outlines the land use planning benefits. The application proposes to create 43 residential units more than 2.5 times than the number in the consented application (17 units).

(xxxi) This report concludes that the harm arising from the demolition of Buildings 2 and 4 is limited and less than substantial. There is little effect on the designated asset, (i.e. the CA), and the most important buildings, will not just be kept but will be refurbished and given a secure future use. The land-use planning benefits are also significant considerations of weight (see the Planning Statement).

(xxxii) The restoration of Buildings 1 and 5 will enhance the setting of the nearby listed buildings insofar as they are visible; the effect will be slight and may not be noticeable to the casual observer. These improvements will enhance the appearance of the courtyard, which is an element in the CA.

(xxxiii) We therefore conclude that the proposals are acceptable in terms of national and local planning policy historic environment and Section 72 (1) of the Planning (LB and CA) Act 1990.

1.0 INTRODUCTION

1.1 This report has been produced on behalf of Victoria Square Property Co. Ltd to accompany the application submission to the London Borough of Camden (LB Camden) in respect of the redevelopment of 44-44a Gloucester Avenue, London, NW1. The report addresses the heritage issues relating to the refurbishment and partial redevelopment works. It should be read in conjunction with the submitted Design and Access Statement and the Planning Statement, which provide full details of all aspects of the proposal.

1.2 The application site (shown on the Site Location Plan, **Appendix 1**), which is described in detail in subsequent sections, falls within the Primrose Hill Conservation Area. The buildings on the site are not statutorily listed; however, they are identified as being of note in the Primrose Hill Conservation Area Statement, where they are called 'buildings which make a positive contribution'.

1.3 The site is near to the Engineer Public House, Gloucester Avenue which is on the southern side of Gloucester Avenue and is statutorily listed (Grade II).

1.4 Attached at **Appendix 2.0** is the extract from the Primrose Hill Conservation Area Statement (PHCAS) detailing the buildings identified as making a positive contribution. At **Appendix 3.0** are the list descriptions for the Engineer Public House and the other closest listed building (the Primrose Hill Primary School in Princess Road).

Application Site

1.5 The application site is a collection of former industrial buildings (No.44) and a residential property associated with the works (No.44A) located on the north east side of Gloucester Avenue, within Primrose Hill, Camden, North London. The buildings were constructed in a number of phases, first by the Electric Telegraph Company and then the Post Office when it acquired the site in 1870. The buildings are sited around a central cobbled courtyard and are bounded on the northern side by the West Coast Main Line.

1.6 The buildings are described in detail in the accompanying Design and Access Statement and more fully in Sections 2.0 and 3.0 of the report. We adopt the same numbering as in the DAS in relation to the various buildings on the site (see site plan with building numbers in **Appendix 4.0**). Site photographs are provided at **Appendix 5.0**. A full historical description of the buildings is provided in **Appendices 6.0 and 7.0**.

1.7 In essence the site comprises:

- the main frontage building which is a three storey, with basement, Victorian warehouse building on the north side of Gloucester Avenue (Building 1), dating from 1870 and constructed by the Post Office. It incorporates an

archway in the centre of the elevation which leads through to the courtyard to the north;

- the double fronted 2 storey house (No.44A) which also fronts Gloucester Avenue and is separated from Building 1 by a gated, separate access to the courtyard to the rear of Building 1. This structure – which was built as a house in 1858, probably for as the site manager or chief engineer, is thus similar to many buildings in the conservation area, and accordingly contributes to its character and appearance – is in poor condition and needing significant investment. In its current state it detracts from the appearance of the area;

- the buildings to the rear and wrapping around the courtyard are set back from Gloucester Avenue behind the main frontage building. These comprise a collection of brick, former industrial sheds of between one and two storey in height which run along the northern boundary of the site (abutting the railway tracks) (Buildings 3 and 4) and infilling the western section of the courtyard (Building 2).

- The main frontage building (Building 1) and Building 2 are occupied for a range of office uses. The buildings to the rear are vacant, in a somewhat dilapidated condition but generally secure and weather tight.

Planning History

1.8 The Planning Statement provides an account of the site's relevant planning history.

1.9 Of most relevance to this application was the grant of planning permission and conservation area consent for the redevelopment of the site with B1 office use and 15 residential units on 20 March 2012. Permission for this was initially refused by LB Camden but granted following an appeal (APP/X5210/E/11/2161889 and APP/X5210/A/11/2161885). The Appeal Decision is reproduced as **Appendix 9.0**.

1.10 This consent established that the demolition of buildings 2 and 4 and redevelopment of the site with office and residential uses was acceptable in principle. The Inspector found no harm to the significance of any listed building near the site. He had information on them before him.

1.11 In 2012 conservation area consent was granted for the demolition of Buildings 2 and 4. Under the terms of Section 63 and Schedule 17 of the Enterprise and Regulatory Reform Act 2013, it is no longer necessary to apply for conservation area consent for the demolition of buildings in conservation areas. Consent for demolition in conservation areas is now applied for with planning permission.

Proposed Development

1.12 The client has reviewed the market interest in the consented scheme and has decided to revisit the mix of uses. See the Planning Statement for information.

1.13 Since consent was granted for the redevelopment of the site, the Government has introduced permitted development rights for the conversion of offices to residential. The conversion of the existing offices to residential use is the subject of a separate application for prior approval (2014/7701/P).

1.14 The subject application proposes to adjust the balance of office to residential uses, and so to increase the number of dwellings. The proposals address a number of concerns that LB Camden had with the consented design; dormer windows and light wells are no longer proposed and there are improvements to the courtyard façade of Building 3. The sustainability credentials are also improved; the current new build elements of the scheme are targeting Code Level 4, when the consented scheme was Code Level 3. The works to the retained building are targeting BREEAM Domestic Refurbishment, Very Good, when the consented scheme was Ecohomes. The current scheme will meet the new 2013 Building Regulations, while the consented scheme only met 2010 Regulations. The accommodation standards are improved and now meet Lifetime Homes standards.

1.15 The description of development is:

> '*The demolition of buildings identified as number 2 at the northwest corner of the site and number 4 at the eastern corner of the site to provide a new ground plus 5 upper storey building along the north west part of the site and a ground plus 2 upper storey building at the eastern corner and refurbishment of the existing building on site to create 40 residential units, employment floor area (Use Class B1a) car parking and landscaping within the courtyard and ancillary works.'*

1.16 In heritage terms, the proposed changes to the consented scheme in our judgement not material. As in the consented scheme, Buildings 1, 3 and 5 are to be retained and refurbished, while Buildings 2 and 4 are to be demolished and replaced with contemporary new buildings within a similar building envelope.

1.17 The main design changes to the consented scheme largely derive from adjustments in the balance of the proposed uses, as follows:

- Building 1 is now to be converted to residential rather than office use.
- The rear extension to Building 1 containing a lift and bathrooms in the consented scheme has been slightly increased in scale to contain a lift and more spacious and naturally lit stairs to serve the proposed dwellings.
- Rooflights are now proposed in Building 1 to enable the conversion of the third floor to residential use.
- Residential use for the replacement building for Building 2 is now proposed instead of office use.

- The replacement building for Building 2 has been increased in scale by one storey and the massing altered so that there is no longer a set back at first floor level in the north-western corner of the site (abutting the railway and a retail unit).
- Minor adjustments to the pattern of fenestration and doors in the south side of Building 3 from the consented scheme.
- Office use is now proposed on the ground floor of the replacement Building 4 instead of residential use, with residential uses remaining above. A new basement is now proposed in Building 4 for a music studio.
- The single-storey link structure between Buildings 4 and 5 has been removed and replaced with private amenity space.
- Landscaping improvements are now proposed for the courtyard with planting and trees, while the consented scheme was entirely paved for car parking.

1.18 Full details are provided in the accompanying Design and Access Statement and Planning Statement. The land use considerations are addressed in the Planning Statement. The illustrations in sections 3.3 and 3.4 of the DAS help explain the changes to the consented scheme.

Heritage Assets

1.19 For the purposes of this Heritage Assessment, the heritage assets are:

1) the Primrose Hill Conservation Area, specifically Sub Area Two as defined in the Conservation Area Statement; and

2) nearby listed buildings (primarily The Engineer Public House (Grade II) & the Primrose Hill Primary School (Grade II).

1.20 Camden has published a draft Local List of locally significant buildings, landscapes and features of heritage value (October 2013), none of which are located near the site or in its setting.

2.0 HISTORY OF THE SITE

2.1 This section of the report summarises the historic development of the application site.

2.2 An historical analysis of the application site property was compiled for the first application and amplified for the appeal (see **Appendix 7.0**). The findings are summarised in the following paragraphs.

Electric Telegraph Company

2.3 The site was first developed by the Electric Telegraph Company, of which there is an extremely detailed web-based history by Steven Roberts (see http://distantwriting.co.uk/electrictelegraphcompany.aspx, which is reproduced as **Appendix 8.0**). This is not an academically refereed source and does not have source notation; however, it is clearly based on extensive work in primary sources (there is a long list of them on a dedicated tab). It is also cogently written, and appears to me to be generally reliable.

2.4 The ETC was founded as a joint stock company in 1845. Its activities required a private act of parliament, achieved the following June. From the beginning it was conceived as a communication system accessible to any paying user, and it was intended to be national. Its promoters (who included the noted railway engineer and contractor Samuel Morton Peto and the stationer W H Smith) realised that they could make use of railway lines to connect destinations, and the first circuit was completed along London and North Western Railway line to Birmingham (the line whose cutting demarcates the conservation area). This connection was completed in 1847, at the same time of the first phase of the application site's development. Other lines were then underway (the Midlands and Yorkshire, again making use of railway lines).

2.5 The company's headquarters and prestige offices were in town, initially in Lothbury in the City of London, completed in 1847. In the following year the company took offices in a prestigious Nash development in the Strand. Less smart back-office premises were constructed in Moorgate in 1859. By this date, 1859, the Gloucester Avenue site had been completed. There is a brief mention of what were described as 'offices in Camden Town' in the company's half yearly report for 1858 – they are said to be nearing completion. Their identification as offices is, however, misleading to a modern reader. This does not appear to have been a site where one went to send and receive telegraphs; in fact it appears primarily to have functioned as a factory. The year's second report (December 1858) states the site was completed and occupied in use.

The Development of the Site

2.6 The site was first developed in 1858 as a courtyard, accessed in the same position as it is now, beside a house for the site manager/chief engineer (assumed). It was, however, enclosed by a wall to the street and incorporating single-storey sheds in

addition to two-storey ranges along the railway line. The authors of these plans are not well known engineers or architects (they would likely have been surveyors).

2.7 The first-phase structures survive in part. First is the (assumed) engineer's or manager's house (Building 5), now much disfigured, defining one side of the courtyard access and facing the street. It is proposed to restore and reuse this property.

2.8 Second is the range of buildings along the railway line (Building 3), which the plans tells us comprised (from south to north) The Smithy formerly had a stack (now demolished) and was single-storey. The Packing Shed was also single-storey and appears to have been open to the yard on one side. The Smithy range, building 4, is proposed for redevelopment and so too the current two-storey building on the site of the Packing Shed or part of building 2 (we assume that the original packing shed would have been substantially rebuilt or added to, and our researcher posited a date in the 1890s which is plausible). Figures 6 and 7 of our historical report in **Appendix 7.0** illustrate this point. The elevation of all but the Packing Shed are recognisably what is one site today.

2.9 The site is not identified in sources until 1870 when the Post Office purchased the ETC, at which point the department's own surveyors probably prepared a plan showing the retention of the railway ranges and the redevelopment of the frontage as a workshop and offices. A later plan shows how it was intended to be used, but there is no evidence of this today. Drawings of July 1871 in the National Archive at Kew show the building to Gloucester Avenue (Building 1) more or less as eventually constructed. The drawings show the intention was to provide some architectural relief to the street frontage (presumably in deference to the neighbours); the rear elevation is monotonous and unrelieved. The other notable characteristic of this building is its extremely shallow plan. The Post Office was coming to an existing site which was itself quite shallow. A deeper building would have taken up courtyard space that was otherwise required, and of course have blocked light to the earlier, two-storied ranges.

2.10 Between this range and the old Packing Shed the Post Office added, after 1877, a two-storey gabled building identified as a Store Room and Van Shed. This appears to have been projected several years earlier, but for reasons probably never to be determined its design and construction were delayed by six years. A building in this location does appear, however, on the early site redevelopment plan made at the time of the Post Office takeover. This former Store and Van Shed structure is also proposed for redevelopment, and comprises the larger part of Building 2. Not enjoying a street frontage, it is of utilitarian appearance.

Summary of Site's Historical Development

2.11 In summary, the site was first developed in 1858 as a courtyard factory, enclosed by walls to adjoining properties and the road. There was a mix of simple and utilitarian one and two-storey structures, the higher ones positioned to the railway line, including

Building 3 and part of Buildings 2 and 4. These survive. The house on the site is assumed to have been built for the site manager or chief engineer, and likewise survives (Building 5). This work was done for the Electric Telegraphy Company, the first private telegraphy company in the UK. That company was, however, established more than a decade before the site's construction, by which point its network was underway. It had a number of premises, both front and back office accommodation.

2.12 In 1870, the Post Office purchased the site and undertook the significant development that defines the frontage today (Building 1), a combined workshop and office block in polychrome brickwork. This can be dated to 1871. Shortly after, in 1877, the Post Office added a two-storey, gabled block to the rear of this, as a storeroom and van shed (Building 2).

2.13 Thus, the site has a historical association with an important industrial-communications enterprise, albeit not with the founding of that enterprise. The site was very substantially redeveloped after that association ended, achieving a very different character by a later communications provider, the Post Office. Its position next to the railway is consistent with that historical association, because the telegraph companies relied on railway lines for their way leaves; however, the site location itself appears to have had no particular significance. A factory serving the business' needs did not have to be beside an active line.

3.0 SIGNIFICANCE OF THE HERITAGE ASSETS

3.1 This section of the report assesses the significance of the Primrose Hill Conservation Area and the contribution that the application site makes to it. The section ends by identifying listed buildings in the setting of the site.

3.2 This assessment is in proportion to the importance of each asset (the Conservation Area, application buildings, nearby listed) as advised in paragraph 128 of the NPPF. The Statement has been prepared with regard to English Heritage's guidance on conservation areas and setting (*Understanding Place: Conservation Area Designation, Appraisal and Managemen*t (2011) and *Setting of Heritage Assets* (2012)).

3.3 This report does not consider archaeology or below-ground heritage assets.

Primrose Hill Conservation Area

3.4 The Primrose Hill Conservation Area was designated in 1971. There is an adopted Conservation Area Statement (2001), to which the following description refers.

3.5 The conservation area is largely residential in character, with pockets of commercial use. Its primary importance is as an example of an early to mid-Victorian planned suburb of generally consistent character. It contains examples of a good range of the design types one finds in London in the period 1820 to 1860, and stylistically ranges from buildings that have a late Georgian character to those having a more ornamental appearance, and which are generally called 'Italianate'. These buildings are not unique to this area; the Conservation Area provides a cross section of housing design types that are common across the capital and also outside Greater London. This is because the housing here reflects the work of speculative developers building for the market.

3.6 The earliest surviving distinguishing feature is the Regent's Canal, completed in c. 1820. There followed the London and Birmingham railway which was formed in a cutting.

3.7 A terminus was intended for Chalk Farm, though that was given up for Euston. Some land for this was taken from the Southampton Estate. Thus these two pieces of infrastructure were an important early influence on the urban form of the wider area.

3.8 This infrastructure also provided the impetus to develop the Estate's land. That development began in the 1840s on a speculative basis. Primrose Hill nearby was open to the public in 1841. The initial estate plan shows the clear influence of the nearby development around Regent's Park: detached and semi-detached villas set in generous gardens arranged in a picturesque way. The road alignments of this first phase are still evident, though the eventual development took a different and denser form to what was at first envisaged. Even the earliest houses constructed appear to

have varied from the grand estate plan and tended to be more modest than what was at first envisaged. Though large villa development continued, by 1860 terraced development in varying styles had arrived.

3.9 The presence of the railway may explain the failure of the first plan for an exclusive planned villa suburb. Early in the area's history the eastern end of Gloucester Avenue attracted industrial uses, and the application site falls within that distinct sector of the conservation area. Some of these industrial concerns were notable, and include piano manufacturers, and by the late 1870s artists came to live in the area, including some ones who are notable in reputation still today.

3.10 The appraisal notes that by 1870s the basic form of the conservation area, and its component parts, had been established though there were later infill developments (including some quite recent development). Bomb damage in WWII destroyed and damaged buildings, and this explains some of these later infill developments which depart from the character of the area.

3.11 It is a large conservation area, and its variety of form and layout has resulted in the identification of four sub-areas (map reproduced at **Appendix 2.0**). The first two relate to the application site.

- **Sub-area 1 – Regent's Park Road South**

  i. This is bounded on one side by the Canal and on part of the other by the railway. Whilst generally characterised by lower density development, this area consists of a strip along Gloucester Avenue of larger scale and more recent development, on land that was historically associated with the railway (and so historically had a different character to the prevailing residential character). This line of development extends into sub-area 2, to include the appeal site which is thus part of a larger unit spanning two townscape areas and associated with a particular aspect of the area's development (the railway and the industrial uses it attracted).

  ii. Some of these more recent buildings are in themselves of note: the appraisal draws attention to Cecil Sharp House of 1929-30, at the corner of Gloucester Avenue and Regent's Park Road, and no. 10 Regent's Park Road by the admired modernist architect Erno Goldfinger and dated to 1954-56. This is distinctive and different in the conservation area, though no less valuable for that. There is only a marginal effect on this sub-area arising from the proposals, arising from a glimpsed view; the application site is also part of a character 'strip' that is shared with context for the appeal site. Our assessment is that this effect is not material for planning purposes.

- **Sub-area 2 – Central Area**

i. The application site is located in this sub-area. This character area consists largely of level land laid out according to an orthogonal geometry and having a more densely developed character. It is 'dominated', the appraisal states, 'by long terraces of mid C19 houses that are set back from the pavement with small lightwells and railings to basement areas, although there are some earlier and later buildings within the area'.

ii. The houses conform to standard terraced types: three storeys generally, with stocks in Flemish bond, rendered and with painted detailing. Several were 'designed', accordingly to the appraisal, to accommodate retail uses, public houses on the lower floors with residential flats above. They are located primarily within the small Neighbourhood Shopping Centres to Chalcot Road, Gloucester Avenue, Princess Road and Regent's Park Road'. The application site frontage lies in just such an area and its character is more mixed deriving from non-residential uses. There are five corner pubs in this area, and they lend some architectural variety to it. The appraisal highlights a number of buildings in the area that are generally different to the residential and mixed-use residential blocks, and identifies these as 'Late C19 Multicoloured [or polychrome] Buildings', the larger examples of which include the application site, identified as 'the front building at No. 44 Gloucester Avenue'.

iii. Though the appraisal does not say so, it is evident that this and the adjoining industrial property to the south and east, are part of an industrial strip of land that spans two character areas (this no. 2 and no. 1 along Gloucester Avenue's extension to Camden Town). These two elements are divided by a change in the avenue's alignment and the Canal which creates a sense of arrival-event and so stands as a point of transition. The application site is clearly distinct from much of the characteristic development in this area and across the whole area. The appraisal makes it clear that this difference is of interest – namely the industrial buildings are architecturally and historically noteworthy.

iv. There is a separate heading (pages 15 and 16) dealing with 'Alleyways and Block Infills' within this sub-area, which states:

> *"The majority of land at the centre of the blocks and neighbouring railway line is occupied by buildings that accommodate a variety of uses, including industry, offices, artists's studios and residential accommodation. These buildings vary in age and style, but are generally lower in height than the surrounding terrace properties. They are clustered around small enclosed*

courtyards, or gardens, which area accessed from the main highway by a narrow alleyway. These alleyway accesses are generally contemporary with the C19 development of the area and are either located discretely between the residential terrace properties on the main roads or through the terraces via gated archways. Consequently, although these developments occupy a considerable amount of land, they are largely hidden from view, therefore allowing the residential terraces to dominate the townscape.

"There are some exceptions to this pattern of development. In Gloucester Avenue, where the width of the land neighbouring the railway line is restricted, there are a number of prominent industrial buildings. At the southwest side of Fitzroy Road is a former piano factory, which is located in a prominent position and is boldly designed in terms of height, scale and architectural style."

The application site property falls into the second category, of prominent industrial buildings which are exceptions to the alleyway or block infill form.

- **Sub-area 3 – Regent's Park Road North** focuses on the gently curving route of that name, and runs from the complex junction at the north (west) end of Gloucester Road. This area will be unaffected by the proposals.

- **Sub-area 4 – Gloucester Crescent** which is a fairly self-contained area largely separated from the core area by the railway cutting, and it is defined by the distinctive crescent form. This area will be unaffected by the proposals.

3.12 The entirety of the application site is identified on a plan showing listed and 'positive contribution' buildings, and the accompanying schedule gives the relevant address as 44 Gloucester Avenue (see page 25). This plan is reproduced at **Appendix 2.0**.

3.13 Therefore the application site as a whole is not characteristic of the wider area, and is located in one particular part of mixed residential-commercial character.

Local Views Identified in the CA Statement

3.14 The appraisal identifies significant local views within each of the sub-areas. Seven are identified within sub-area 2, Central Area (wherein in the application site is located), of which two are relevant. These are not identified as specific points, and no characterisation is offered. No views of the site from outside the conservation area have been identified (that is, none across the railway).

3.15 The first view identified by the appraisal in sub-area 2 is along Gloucester Avenue 'downhill from the north end… looking south towards the bend in road and stepped buildings' (see page 16). This view is characterised by:

- The attractive change in level and alignment of the road at its north end;
- The unusual staggered frontages of terraces oriented towards the bend;
- 3 and 3 ½ storey speculative terraced development of a typical early to mid Victorian type, faced variously in stock brick and render, with classical and Italianate detailed.

3.16 Beyond this bend, the avenue opens out into a long linear view lined with speculative terraced development that is typical of the area. We have modelled a view further east of this point– see view 5.0, **Appendix 10.0**. At the junction with Dumpton Place, there is a complementary view south and west, along that road, and in the other direct a view into backland sites in industrial use (and buildings that are unattractive). One is aware also of the railway cutting because of equipment and the blank, Victorian cutting wall. As one approaches the site from this direction, the architecture and character changes and becomes more mixed and varied.

3.17 There is a mixed use, terraced development – one of the polychrome buildings the appraisal refers to – the application site itself, a public house of slightly different character to the prevailing residential formats, a recent development of brick and glass and, in the distance an older industrial building closing a view which includes the rising form of the canal bridge. The western gable ends of the Application Site were previously more widely visible in this view, across a gap site which has since been infilled.

3.18 The other view identified is in Princess Road, 'view east towards 44a Gloucester Avenue [the residential component of the application site]'. (See also page 16) – and **Appendix 10.0**, view 1.0.

3.19 This view is characterised by terraced speculative development on the left or northwest side, with the Victorian School Board School opposite. It also features the more recent, contemporary styled development of brick and glass (employment use). Accordingly its character is more varied. No 44a closes the view but there it is not part of a designed or planned ensemble (it does not, for example, centre on the road, it merely occurs in the view). Furthermore, as a single, three-bay, centrally planned house it is different to the terraced development on the northwest side of the road.

3.20 The appraisal also identifies as significant views 'into mews and alleyways from principal and secondary roads', corresponding therefore to the incidental views one has into the courtyard from closer to the vehicular access.

3.21 From that point one can clearly see a significant portion of the two-storey ranges which are to be retained and refurbished in the application scheme. Views toward the southeast corner of the courtyard are fairly limited by the width of the access, but one

can see of the single-storey shed proposed for removal and, rising up behind it, the return elevation of the contemporary development behind.

3.22 There are two further views which need to be considered in the determination of this application:

3.23 First is the view from the canal bridge, along Gloucester Avenue, which is characterised by an awareness of the canal, the length of the road, and the contemporary development adjoining a three-storey historic (unlisted) industrial structure set back from the frontage. This is out from sub-area 1 into sub-area 2 of the conservation area, and has been modelled – see **Appendix 10.0**, view 4.0.

3.24 Second is the view northeast along Edis Street, which is closed by the northern ranges of the polychrome frontage building. This linear view is well enclosed and characterised by three storey terraced houses and the contrasting frontage of the application site building, as well as by semi-mature street trees. See **Appendix 10.0**, views 2.0 and 3.0.

3.25 It is worth noting that in the appeal decision the Inspector concluded that the view from the supermarket on the far side of the railway tracks:

> *'is not identified as an important view in the conservation area appraisal and its value has been reduced by firstly the clutter of overhead line equipment on the railway and secondly by the quality of the viewpoint, being the service area and bus stops of the supermarket.'* (para. 13)

This view is shown in photographs 2.12 and 2.13 in **Appendix 5.0**

The Contribution of the Site to the Conservation Area

3.26 English Heritage's Understanding Place: Conservation Area Designation, Appraisal and Management (2011) incorporates a checklist (page 15) 'to identify elements in a conservation area which may contribute to special interest', adding:

> *"A positive response to one or more of the following may indicate that a particular element within a conservation area makes a positive contribution provided that its historic form and values have not been eroded over time."*

3.27 The form of the complex has been eroded over time through loss, damage and unsympathetic alteration. These losses clearly do not remove the complex's value, but they do weaken it and in so doing present obvious opportunities for enhancement or, as NPPF puts it, to 'better reveal' significance (para 137).

3.28 We now address the checklist of questions. The question in the guidance is given in italics and the answer in normal type.

1. *Is it the work of a particular architect or designer of regional or local note?* No.

2. *Does it have landmark quality?* The 1871 Post Office workshop-offices do (Building 1), because of their scale and character and colour-materials, so at variance with the surrounding speculative housing. The other components do not have landmark quality; the presence of a cobbled courtyard, glimpsed through the vehicle access, does contribute to the landmark function of the frontage building.

3. *Does it reflect a substantial number of other elements in the conservation area in age, style, materials, form or other characteristics?* No, albeit those characteristics etc. are distinctive and of interest and so add something different of value.

4. *Does it relate to adjacent designated heritage assets in terms of age, materials or in any other historically significant way?* Yes, but the proposals are agreed not to have any material effect on their setting. The nearby listed buildings are considered to be the Engineer Public House and Primrose Primary School (see List Descriptions at **Appendix 3.0**).

5. *Does it contribute positively to the setting of adjacent designated heritage assets?* No. Yes, but again the proposals do not affect this relationship.

6. *Does it contribute to the quality of recognisable spaces including exteriors or open spaces with a complex of public buildings?* No, the main building frontage simply defines the street. This criterion is not applicable.

7. *Is it associated with a designated landscape…* ? No, not applicable.

8. *Does it individually, or as part of a group, illustrate the development of the settlement in which it stands?* Yes, but then so does any structure of any degree of permanence in any area. The question here really is what of significance does it contribute to our understanding of an area's or settlement's development, and the answer in this case is that it reflects a minor episode in the history of the area's development, arising from industrial uses attracted to one small part of it in the mid to late Victorian period by the railway.

9. *Does it have significant historic association with features such as the historic road layout, burgage plots, a town park or landscape feature?* No.

10. *Does it have historic associations with local people or past events?* Yes, with the history of electric telegraphy, though in a secondary way only, as a backroom supporting facility constructed more than a decade after that medium's introduction to the UK.

11. *Does it reflect the traditional functional character or former uses in the area?* No, not the prevailing uses which provide the reason for designating the conservation area, which is residential in the main.

12. *Does its use contribute to the character or appearance of the area?* Yes to some extent only, but the proposals will maintain the existing use and add a residential one, both of which are characteristic. The character of the area would be unchanged.

3.29 These are wide ranging questions, and it would be surprising if any structure did score a 'yes' in relation to one or more question (including, perhaps even a modern garden shed). Notwithstanding that, they do focus consideration on the impact of the proposals.

3.30 The relevant contributing attributes are therefore:

- The landmark quality of the 1871 building (Building 1), reinforced to a certain extent by the courtyard, glimpsed views of which are possible from the public highway;

- The historical associations of surviving elements with the Electric Telegraph Company, albeit only one of these elements is prominent in the streetscene, the manager's house (Building 5), and its character is not industrial. The Post Office associations are more limited. Neither use makes a particular contribution to the area, though in any event the proposals preserve and enhance elements from both phases.

The Contribution of Individual Buildings to the Conservation Area

3.31 The appeal decision identified the complex as making a positive contribution to the area, that buildings have group value but they do not all contribute equally. The following paragraphs therefore assess the contribution of individual buildings, with reference to the Inspector's conclusions in the appeal decision. A plan showing the building numbers is included at **Appendix 4.0** and photographs of the buildings at **Appendix 5.0**.

Frontage Buildings

Building 1

3.32 In terms of the hierarchy of significance of the buildings within the site, that making the highest contribution to the Conservation Area – and illustrated in the PHCAS – is what we have identified as Building 1. It comprises a three storey (plus basement) industrial building fronting onto Gloucester Avenue, with central bay containing a carriageway entry to the courtyard behind. This originally formed the primary access to the site and the courtyard was developed on its east and north sides. This is the

most prominent building on the site and also the most distinctive because of its extent and position and distinctive, robust industrial form.

3.33 It is built of yellow brown London stock brick, with a low pitched hipped-ended Welsh slated roof, concealed from the street frontage by a tall parapet, but with open eaves at the rear. It is subdivided into 15 bays, with the central 5 set slightly forward and incorporates double hung, timber sash windows, recessed into brick reveals. Above the window heads are segmental brick arches and there are projecting plat bands immediately below the window cills. The rear elevation has the same elevational treatment but is much simplified, lacking the different coloured brick. It has, as a result, a somewhat blunt utilitarian appearance which is valuable only in the senses that it communicates an industrial use. It is not attractive. The end elevations are plain apart from the turned ends of the bands and cornice. The building is highly visible in views of this part of the conservation area.

3.34 In general terms, this building has a strong presence in the streetscape and is visually robust. Its colouration and materials relate it to other buildings of similar date nearby and compositionally it presents itself as a simple slab with slight central emphasis.

Building 5

3.35 Like Building 1, Building 5 makes a significant contribution to conservation area townscape. Albeit in its current condition, this contribution is undermined and its derelict character is harmful.

3.36 This building is a two-storey, three bay residential dwelling (No.44A), with a low pitched end-gabled Welsh slate roof, with verge parapet and flanking chimney. It is also built of stock brick, with the front elevation painted white and there are stuccoed architraves surrounds to the windows, which are double-hung timber sashes. It originally had a garden to the west and at some point in the intervening period this garden was redeveloped to provide the primary access to the site and the courtyard area behind. Its scale is smaller than other buildings in the vicinity as can be seen from the photographs at **Appendix 5.0.** It is flanked by the modern redevelopment scheme to the east. It has historical associations with the rest of the industrial complex, having been built originally, we understand, to provide accommodation for a site manager.

3.37 As previously detailed, the house is vacant and generally in a very poor state of repair with the all windows in the front and elevations boarded up. The boundary treatment adversely affects the external appearance of the site and the front garden is overgrown and unkempt.

Courtyard Buildings

Buildings along the Northern Boundary (Building 2 (part), Building 3 and Building 4)

3.38 To the rear of the frontage buildings are a single-storey shed and two, two-storey structures forming a courtyard. There is, we understand, agreement that Building 4 is not of any real significance, and its demolition accordingly requires no special justification in NPPF terms. This is due to the fact that the building / extension contributes little to the setting of the frontage buildings, it retains little in the way of distinguishing features and detailed in the photographs at **Appendix 5.0**.

3.39 The appeal decision concluded that Building 4 is of:

- 'limited value' (para 8);
- 'has lost much of its historic association' (para 9)
- 'without its defining flue is not an attractive building on its own or in association with the others' (para 9).

3.40 As a group all of these are of a more utilitarian character, built of yellow / brown London stocks, with Welsh slated roofing.

Building 2 (infill part)

3.41 Enclosing one end of the courtyard is a gabled building, Building 2. This appears of a single building consistent with the return of the Building 1; however, it appears to have been partly rebuilt – the gable facing the courtyard evidences this – possibly as a result of bomb damage. The map evidence is also worth considering, because it shows a shallower structure on the site than what is there now. Either the older building was extended (deepened and probably raised) or it was rebuilt and successfully bonded in to the return of Building 1. The gable facing the courtyard looks rebuilt, albeit keeping to an earlier pattern of openings (perhaps a re-facing making use of original bricks). This range was originally distinct, but later extensions to either side at the lower level present a continuous structure (the facing gable, however, reads as a discrete element).

3.42 This area has also been altered (Building 2) extensively in the 1970s. A canopy projects from the first floor level of this building into the courtyard affording protection to the loading bay area of the site. This canopy has no intrinsic design interest.

3.43 The flank elevation of Building 2 is visible from a limited area in Gloucester Avenue, down a gap between the subject site and a new property just completed on the adjoining plot – again see photos in **Appendix 5.0**. This building range extends to the railway line to the north; however, the recent redevelopment on the adjoining site has reduced visibility of this gable end significantly from the public highway.

3.44 The appeal decision concluded that the visual effect of the proposed demolition of Building 2 is 'tempered' by its 'limited visibility' (para 8). Furthermore that Building 2:

- 'whilst being a further extension of the history of the site's use was an ancillary and later building' (para 9); and that

- 'Building 2 does feature in glimpsed views since the redevelopment of the adjoining Sunny Mews, and it does present a gable end design, but not one of particular architectural or aesthetic interest' (para 9).

Building 3

3.45 The building running along the northern boundary is divided into 4 bay lengths, with firestop parapets taken above roof level. It has large window openings to maximise natural light with replacement windows and it has been extensively altered with later unsympathetic additions, poor infill brickwork as shown on the photographs included within the Design and Access Statement. We note that whilst 'Building 4' has been separately identified for the purposes of the Design and Access Statement, we consider it to be a single-storey infill extension to Building 3.

3.46 Although historic plans show ranges in the position of Building 3 from 1858, the detailing of the building and its general character suggest it has been heavily altered, either later in the C19 or indeed even in the C20. The lintel treatment is particularly important in forming this conclusion: that detail – an assumed steel element with a brick soldier course above – is not what one would expect to find in a building of c.1858. However, even assuming it is contemporary with Building 5, its architectural character is frankly utilitarian, reflecting its industrial use.

3.47 The Inspector identified Building 3 as being important to the historical value of the site 'linked to the introduction of telegraph communication with the site being close to an early railway into London.'

Summary of Significance

3.48 In summary, then, we have concluded that the Buildings 1 and 5 make a significant contribution to the appearance of this part of the conservation area. Furthermore their industrial character reflects the history and buildings in this sub-area (beside the railway cutting). The frontage buildings also have significant setting relationships with other buildings of interest (either listed, for example the pub) or unlisted (many of the terraced properties which form part of the first, residential phase of the area's development).

3.49 Building 4 is a very utilitarian structure of no aesthetic or townscape merit.

3.50 Buildings 2 and 3 are of some interest by virtue of their industrial character and materials, which relate to the history of this part of the conservation area; however, their position and modest architectural qualities/extent of rebuilding limit their contribution both to this part of the conservation area and to the CA as a whole.

3.51 Turning to English Heritage's *Conservation Principles*, the site as a whole is historically significant for its relationship to the industrial uses which the railway

brought to the area shortly after it was first being developed for housing, and specifically for its links to the introduction of telegraph communication. It has some aesthetic significance relative to the conservation area, and this derives primarily from Building 1 and, to some extent, Building 5.

3.52 Within the complex, there are different levels of significance. The courtyard buildings to the rear are of less value, but contribute to the character of the area as an industrial enclave associated with the railway to the north. The extent of alteration, set back position and general utilitarian nature of those running along the rear boundary of the site results in their contribution to the character and appearance of the Conservation Area being less significant.

Listed Buildings

3.53 The application site is in close proximity to one listed building, the Engineer Public House, No.65 Gloucester Avenue (Grade II) which is located on the south side of the road to the south west of the site. The list description for this property is attached at **Appendix 3.0**. Also listed, but sited further away and not considered to be within the setting of the site is the Primrose Hill Infants School (Grade II). The positions of these buildings are shown at **Appendix 2.0** and given the distance, further consideration is not considered necessary for the purposes of this assessment. This is a typically robust, elaborate mid to late Victorian public house, which is itself different in its character to the surrounding, more restrained development. It is a destination buildings, standing out from the general run of terraced properties and for that reason forming an attractive pair with the long, frontage building on the application site.

4.0 LEGISLATIVE AND PLANNING POLICY CONTEXT

4.1 This section summarises the relevant statutory provisions, planning policy and other material considerations on the historic environment.

Statutory Provisions: The Town and Country Planning (Listed Building and Conservations Areas) Act 1990

4.2 The key statutory provision in respect of development in conservation areas is set out in Section 72(1) of that Act which states:

> *"In the exercise [of planning functions], with respect to any buildings or other land in a conservation area, of any functions under or by virtue of any of the provisions of subsection (2), special attention shall be paid to the desirability of preserving or enhancing the character or appearance of that area'.*

4.3 The 'South Lakeland' decision of the House of Lords established that the test of preservation is satisfied either by development which leaves a conservation area unharmed or which enhances it.

4.4 'Character' is a broad concept, embracing, for example, use and other characteristics (vitality, functionality, etc). 'Appearance' has a conventional meaning, that is, the 'look' of an area, or its design.

4.5 Section 66(1) relates to listed buildings and is also relevant:

> *'In considering whether to grant planning permission for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses.'*

The Enterprise and Regulatory Reform Act 2013

4.6 The Enterprise and Regulatory Reform Act 2013 amended the Planning (LB and CA) Act 1990, so that under Section 63 and Schedule 17 it is no longer necessary to apply for conservation area consent for the demolition of buildings in conservation areas. Consent for demolition in conservation areas is now applied for with planning permission.

The 'Barnwell' Decision

4.7 For the sake of completeness, we draw attention to the recent Court of Appeal decision *Barnwell Manor Wind Energy Ltd v. East Northamptonshire District Council* and others (Case No C1/2013/0843) or 'Barnwell'.

4.8 This decision does not result in any change in setting out what is in fact required when applying the statutory duties under sections 66 and 72 of the P(LB & CA) Act 1990 in cases where any harm to heritage assets is found to arise. The approach in the NPPF is consistent entirely with the statutory provision and so too with the recent Court of Appeal decision.

4.9 We understand Barnwell in this way.

4.10 There is a strong presumption against granting of planning permission for proposals that harm listed buildings or conservation areas. Statute requires that the decision makers apply 'considerable importance and weight' to any harm arising to listed buildings (and by implication conservation areas) when balancing with the wider planning benefits.

4.11 The Barnwell judgment is also clear (in paragraph 28) that the strong presumption against allowing development which causes harm to the setting of a listed building or conservation area lessens in weight as the importance of the heritage asset decreases and if the harm is less than substantial rather than substantial.

4.12 When reviewing the assessment and forming our conclusions any harm to heritage assets, and the strong statutory presumption it carries with it have been given considerable importance and weight.

The Statutory Development Plan

4.13 The statutory development plan applicable currently consists of:

- the London Plan 2011
- LB Camden's Core Strategy 2010 and
- LB Camden's Development Policies, also 2010.

4.14 LB Camden is preparing a new draft Local Plan, which is not yet published.

The London Plan 2011

4.15 The London Plan's objectives of seeking the intensification of use, including residential use, of previously developed, accessible sites, is relevant to the determination of this application (see, for example, policies 3.3 and 3.4). So too are those policies in section 4.0 (for example 4.1 and 4.2c) which support economic development and the improvement of employment accommodation, as does the policy (4.3b) encouraging a mix of uses on employment sites.

4.16 Policy 7.4 on Local Character seeks to encourage a contextual approach, based on an assessment of the physical characteristics of an area appropriately interpreted and applied.

4.17 Policy 7.8 encourages design appropriate to its context and of high quality, comprising details and materials that complement, without necessarily replicating local architectural characteristics.

4.18 Policy 7.8 part (i) seeks development that optimises the potential of all sites having regard, of course, to general design and contextual considerations as well as issues of amenity, transport and so forth.

4.19 Policy 7.8 part (c) states that development should identify, value, conserve, restore, re-use and incorporate heritage assets, where appropriate. Part (d) states that:

> *"development affecting heritage assets and their settings should conserve their significance, by being sympathetic to their form, scale, materials and architectural detail."*

4.20 Policy 7.9 is consistent with NPPF considerations and encourages councils and developers to have regard to the significance of all heritage assets in the development process, both for the quality of life they bring but also because the refurbishment of older buildings can have a particularly powerful regenerative effect.

Revised Early Minor Alterations to the London Plan (11 October 2013)

4.21 The Mayor of London considers the London Plan policies are consistent with the NPPF and that the London Plan can be '*seen as the expression of national policy for London, tailored to meet local circumstances and to respond to the opportunities to achieve sustainable development here'.* A number of alterations have been made to the London Plan to ensure it is as up-to-date as possible.

4.22 There are no alterations to Policy 3.4. There are minor alterations to the supporting text to Policy 7.8 at paragraph 7.31, which is consequently split into two paragraphs. The policy wording is unchanged.

Draft Further Alterations to the London Plan (January 2014)

4.23 The Mayor has undertaken a review of the London Plan and produced a draft document that highlights the proposed changes to the Plan. At the time of writing this was in draft form.

4.24 There are no proposed changes to the wording of the policies cited above. The supporting text of Policy 3.4 reflects that the Housing SPG has now been published.

LB Camden Core Strategy (2010)

4.25 **Policy CS14** of the adopted Core Strategy states that Council will ensure Camden's places and buildings are attractive, safe and easy to use by:

"a) requiring development of the highest standard of design that respects local context and character". This applies to the development as a whole, and the local context is the conservation area.

"b) preserving and enhancing Camden's rich and diverse heritage assets and their settings, including conservation areas, listed buildings, archaeological remains, scheduled ancient monuments and historic parks and gardens."

4.26 Policy CS14 is a broad statement of intent, reflecting the general provisions of the NPPF in its recognition of context and heritage as important to promote quality of life within the Borough. Specifically, at para 14.9 the Core Strategy recognises conservation area statements as material to the development control and decision making process. There is such an adopted appraisal here, to which we refer.

4.27 The inset box on pages 93 to 95 of the Core Strategy deals with Camden's character, and distinguishes between the southern part of the Borough (which forms part of 'Central London') and 'the central part of the Borough' (wherein the appeal site is located). The former will accommodate most of the Borough's growth; the latter is focused around town centres. The commentary here, on such areas, is mostly about character, and in no way discourages development. Notwithstanding the plan envisages most growth taking place in the southern part of the Borough, the other parts have to take some growth and the implication is that growth will be commensurate with the general character of the areas.

LB Camden, Development Policies (2010)

4.28 The Development Management Document, Camden Development Policies 2010, includes policy **DP24**. This is again a general design policy recognising contextual and heritage influences as important determinants of change. The Borough has no 'stylistic' preference, and accepts high quality contemporary design except in areas 'of homogeneous architectural style that it is important to retain…' (24.6). As will be seen, the Conservation Area is generally one such area, save that in one part, in which the appeal site is located, there is a different pattern of development and this is an important consideration in the decision making process. In line with established best practice, this policy recognises that buildings of local interest can make a significant contribution to the good planning of the area.

4.29 Para 24.13 deals, inter alia, with extensions, advising against 'overly large extensions' that 'can disfigure a building and upset its proportions'. The unusual characteristics of this building complex in this case make application of strict definitions of limited value. Moreover, in the present case it is too simplistic to treat the proposed new structures in the development as merely extensions to a single "building" either.

4.30 The particular site circumstances here require one (amongst other things) to assess it as a whole. No special circumstances are required to justify this approach (see para 24.13 again).

4.31 Policy **DP25** Conserving Camden's heritage states advises that *'In order to maintain the character of Camden's conservation areas, the Council will:*

a. take account of conservation area statements, appraisals and management plans when assessing applications within conservation areas;
b. only permit development within conservation areas that preserves and enhances the character and appearance of the area;
c. prevent the total or substantial demolition of an unlisted building that makes a positive contribution to the character or appearance of a conservation area where this harms the character or appearance of the conservation area, unless exceptional circumstances are shown that outweigh the case for retention;
d. not permit development outside of a conservation area that causes harm to the character and appearance of that conservation area; and
e. preserve trees and garden spaces which contribute to the character of a conservation area and which provide a setting for Camden's architectural heritage'.

4.32 DP25 also includes policies on listed buildings. Of most relevance to this application this states that the Council:

"g. not permit development that it considers would cause harm to the setting of a listed building."

4.33 It is no doubt purporting to implement the statutory test, although part a) refers to preservation and enhancement, rather than preservation or enhancement as in the Act.

4.34 Part c) seeks to prevent the total or substantial demolition of an unlisted building of merit in a conservation area, 'unless exceptional circumstances [our emphasis] are shown that outweigh the case for retention'.

4.35 It is interesting to note that the same policy's explanatory text on statutorily listed buildings, para 25.12, sets out the Council's 'general presumption in favour of the preservation of listed buildings', continuing:

"Total demolition, substantial demolition and rebuilding behind the façade of a listed building will not normally [our emphasis] *be considered acceptable."*

4.36 If read uncritically, then, this policy, DP25, would be stating that listed buildings enjoy a lesser order of protection than unlisted buildings in a conservation area. 'Exceptional circumstances', required for demolition of unlisted buildings of note, is on its face, a higher order test than 'not normally', for demolition of listed buildings.

4.37 For an explanation of DP25 (c) we have to turn to supporting text at 25.6, which references HE7 of PPS5. Although PPS5 has since been replaced by the NPPF, the reference to this policy is revealing; this is the general policy relating to the determination of all heritage based consents. HE7 does not deal with total or substantial loss of significance.

4.38 A comment on the drafting of this policy is that the same paragraph, 25.6, sets out the Council's general presumption 'in favour of retaining buildings that make a positive contribution to the character or appearance of a conservation area, whether they are listed or not…' [our emphasis]. This formulation is effectively superfluous, since the statutory duty on the preservation of listed buildings, section 16 of the Planning (LBCA) Act, is more emphatic, and of course binding in law.

4.39 The drafting of this policy is not consistent with the NPPF. Paragraph 138 of the Framework states that loss of a building that makes a positive contribution to a CA will either constitute substantial or less than substantial harm to the CA as a whole, and should then be considered under paragraphs 134 or 133 respectively. Thus, the decision maker must still consider the level or degree of contribution in particular, and so come to a reasoned view on that basis, not on an absolute basis. To do otherwise would take the policy outside the scope of section 72 of the Act, which cannot be the intention of the Framework.

4.40 DP25, then, needs to be applied in the context of the Framework, NPPG, statutory provision as well as the London Plan.

National Planning Policy Framework (NPPF) 2012

4.41 The National Planning Policy Framework (the NPPF) was published on 27 March 2012 and supersedes previous national planning guidance contained in various Planning Policy Guidance and Planning Policy Statements, including PPS5 which was the national guidance when the appeal was determined. The NPPF sets out the Government's approach to planning matters, and is a material consideration in the determination of planning applications.

4.42 At the heart of the NPPF is a presumption in favour of sustainable development, which should be seen as a 'golden thread' running through decision-taking (paragraph 14). It is stated that for plan-making, this means that '*Local Plans should meet objectively assessed needs, with sufficient flexibility to adapt to rapid change, unless specific policies in this framework indicate development should be restricted*.' Examples of these policies are included at footnote 9, and include those policies which relate to '*designated heritage assets*.'

4.43 Detailed Government policy on 'Requiring Good Design' is provided in chapter 7, Paragraphs 56-68 of the NPPF. In providing general guidance for sustainable development, it is stated under paragraph 56 that: '*good design is a key aspect of*

sustainable development, is indivisible from good planning, and should contribute positively to making places better for people.'

4.44 Paragraph 58 states that planning policies and decisions should aim to ensure that developments achieve the following factors, all of which have been addressed by the proposed scheme:

- *'will function well and add to the overall quality of the area throughout the lifetime of the development;*
- *establish a strong sense of place and attractive and comfortable places to live, work and visit;*
- *optimise the potential of the site to accommodate development;*
- *respond to local character and history and reflect the identity of local surroundings and materials, while not preventing or discouraging appropriate innovation;*
- *create safe and accessible environments;*
- *are visually attractive as a result of good architecture and appropriate landscaping.'*

4.45 In building upon the recommendations of paragraph 58, it is stated under paragraph 59 that policies should '*avoid unnecessary prescription or detail and should concentrate on guiding the overall scale, density, massing, height, landscaping, layout, materials and access of new development in relation to neighbouring buildings and the local area more generally*.'

4.46 With reference to the production of Local planning policies and their application, it is stated under Paragraph 60 that;

> *'Planning polices and decisions should not attempt to impose architectural styles or particular tastes and they should not stifle innovation, originality or initiative through unsubstantiated requirements to conform to certain development forms or styles.'* It is further recognised within this paragraph that it is *'proper to seek to promote or reinforce local distinctiveness.'*

4.47 It is stated under Paragraph 64 that development should improve the character and quality of an area and the way it functions.

4.48 Core land use planning principles are set out at paragraph 17 of the NPPF. One principle is to '*conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generation.'*

4.49 Detailed Government policy on Planning and the Historic Environment is provided in Paragraphs 126 – 141 of the NPPF and builds upon the core planning principles set out in paragraph 17.

4.50 NPPF Paragraph 128 requires applicants to describe the significance of any heritage assets affected by a proposal, including any contribution made by their setting. An assessment of the special interest and significance of the heritage assets affected by the application proposals is set out in Section 5.0.

4.51 Under NPPF Paragraph 129 local planning authorities are advised to identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this assessment into account when considering the impact of a proposal on a heritage asset, to avoid or minimise conflict between the heritage asset's conservation and any aspect of the proposal.

4.52 The historical information set out in this report and its appendices provide such an understanding, proportionate to the significance of the asset and the limited impact of the proposals.

4.53 With reference to the relevant bullet points of Paragraph 131, it is stated that in determining planning applications, local planning authorities should take account of:

- *The positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and*
- *The desirability of new development making a positive contribution to local character and distinctiveness.*

4.54 'Conservation' is defined in the NPPF Annex 2: Glossary as *'The process of maintaining and managing change to a heritage asset in a way that sustains and, where appropriate, enhances its significance.'*

4.55 NPPF Paragraph 132 notes that when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be.

4.56 Paragraphs 133 and 134 deal with proposals which cause harm to the significance of a heritage asset. Paragraph 134 of the NPPF states that where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal. The appeal decision concluded the consented proposals resulted in less than substantial harm to the CA so we assess the scheme in light of paragraph 134 in section 5.0.

4.57 Paragraph 137 states that Local Planning Authorities should look for new development within Conservation Areas which will enhance or better reveal their significance. Proposals which seek to better reveal the significance of the asset should be treated favourably.

4.58 Paragraph 138 relates to demolition in conservation areas:

> *'Not all elements of a World Heritage Site or Conservation Area will necessarily contribute to its significance. Loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area […] should be treated either as substantial harm under paragraph 133 or less than substantial harm under paragraph 134, as appropriate, taking into account the relative significance of the element affected and its contribution to the significance of the Conservation Area […] as a whole* [our emphasis].*'*

4.59 The proposals involve the demolition of part of a building complex in Primrose Hill CA. Our assessment is that these buildings make a limited or no contribution to the CA. We have considered the proposals in light of paragraph 138 of the Framework in section 5.0.

4.60 Paragraph 214 of the Framework states that for 12 months from the day of publication, decision-makers may continue to give full weight to relevant policies adopted since 2004, even if there is a limited degree of conflict with the Framework. The NPPF was published in March 2012 so this period has now elapsed.

4.61 Paragraph 215 of the Framework states that following this 12 month period:

> *'due weight should be given to relevant policies in existing plans according to their degree of consistency with this framework (the closer the policies in the plan to the policies in the Framework, the greater the weight that may be given)'.*

Other Material Considerations

National Planning Practice Guidance (2014)

4.62 The National Planning Practice Guidance (NPPG) was published in 2014 to provide online guidance on the policies in the NPPF. It reflects the existing statute, policies in the NPPF, Circulars, and best practice guidance.

4.63 The sections of the NPPG that deal with design and the historic environment are most relevant. The guidance was accessed on 2 February 2015.

4.64 The guidance on design reflects existing best practice. The NPPG sets out the planning objectives for good design:

- local character (including landscape setting);
- safe, connected and efficient streets;
- a network of greenspaces (including parks) and public places;
- crime prevention;

- security measures;
- access and inclusion;
- efficient use of natural resources; and
- cohesive and vibrant neighbourhoods

4.65 The NPPG defines a well-designed places as:

- functional;
- supporting mixed uses and tenures;
- including successful public spaces;
- adaptable and resilient;
- having a distinctive character;
- attractive; and
- encourage ease of movement.

4.66 The NPPG also defines how buildings and the spaces between them should be considered:

- layout – the way in which buildings and spaces relate to each other;
- form – the shape of buildings;
- scale – the size of buildings;
- detailing – the important smaller elements of building and spaces; and
- materials – what a building is made from.

4.67 The section of the PPG dealing with the historic environment reflects the policies in the NPPF and other best-practice guidance such as English Heritage's guidance on the setting of heritage assets.

4.68 The NPPG defines public benefits:

> *'Public benefits may follow from many developments and could be anything that delivers economic, social or environmental progress as described in the National Planning Policy Framework (Paragraph 7). Public benefits should flow from the proposed development. They should be of a nature or scale to be of benefit to the public at large and should not just be a private benefit. However, benefits do not always have to be visible or accessible to the public in order to be genuine public benefits.*
>
> *Public benefits may include heritage benefits, such as:*
> - *sustaining or enhancing the significance of a heritage asset and the contribution of its setting*
> - *reducing or removing risks to a heritage asset*
> - *securing the optimum viable use of a heritage asset in support of its long term conservation'*

4.69 This is relevant to the application of policy on development that causes less than substantial harm in para 134 of the Framework, which states that harm should be weighed against public benefits.

Primrose Hill Conservation Area Statement (2001)

4.70 This conservation area has been subject to an appraisal which is published by the Council and is material to this case. We have summarised its findings in section 3.0 above.

4.71 We note that the Primrose Hill Conservation Area Statement includes various guidelines including PH1, PH15, and PH16, which are of most relevance to this application.

4.72 Guideline PH1 states:

> *'New development should be seen as an opportunity to enhance the Conservation Area. All development should respect existing features such as building lines, roof lines, elevational design, and where appropriate, architectural characteristics, detailing, profile, and materials of adjoining buildings.'*

4.73 Guideline PH1 is consistent with paragraph 137 of the NPPF.

4.74 Guideline PH15 states that:

> *'The Council will seek the retention of those buildings which are considered to make a positive contribution to the character or appearance of the Conservation Area, and will only grant consent for demolition where it can be shown that the building detracts from the character of the area. Consent will not be granted for demolition unless are development scheme has been approved which will preserve or enhance the Conservation Area'.*

4.75 We have explained at length above why DP25 is inconsistent with Statue and the NPPF. The wording of Guideline PH15 is even stronger, stating that the Council will not grant consent for buildings that make a neutral contribution to the CA. The Framework is clear that there are circumstances when it would be acceptable to demolish buildings that make a positive contribution if the harm is outweighed by the public benefits or the other policy tests are met. Guideline DH15 is not consistent with the Framework and should therefore be afforded limited weight in line with paragraph 215.

5.0 SCHEME ASSESSMENT

5.1 This section of the report assesses the application proposals in light of national and local planning policies on the historic environment.

Principles Established by the 2012 Consent

5.2 Planning permission and conservation area consent was granted in March 2012 following an appeal, for the demolition of Buildings 2 and 4 and redevelopment of the site with residential and office uses.

5.3 The Inspector established important principles for the redevelopment of the site. These principles have informed the current application.

5.4 First, that the demolition of Buildings 2 and 4 is acceptable. While the Inspector concluded that the demolition would result some limited harm to the Primrose Hill CA, he considered that this was less than substantial and outweighed by the public benefits of the scheme, including:

- the reuse and restoration of Buildings 1, 3 and 5;
- improvements to the courtyard;
- enhanced employment floor space;
- creation of new homes; and
- the introduction of sustainability measures such as the travel plan and solar panels.

5.5 Second, that the proposed replacement buildings would not harm the Primrose Hill CA, but were 'at worst, neutral' (para 16) i.e. they would preserve the character and appearance of the CA.

Scope of the Assessment

5.6 Given the principles established by the 2012 consent, we therefore provide an assessment of the changes to the scheme in light of national and local planning policy on the historic environment.

5.7 Since the 2012 decision PPS5 has been replaced by the NPPF with policies on heritage that are broadly similar.

5.8 The judgement regarding Section 72(1) has two parts. First, the Council must consider whether the demolitions cause harm and the scale of harm, as well as the particular aspect of significance affected. Second, the Council must consider the effect of the proposals for redevelopment and whether the two considerations taken together at least preserve the character or appearance of the CA.

The Effect of the Demolitions on the Conservation Area's Character or Appearance

5.9 Conservation area regulation is generally concerned with changes that can be appreciated from public vantage points, and accordingly we begin with an assessment of the contribution which the buildings proposed for demolition make to the street scene, and therefore the effect of their removal. Character is, however, an underlying trait of the land, and comprises use, plot pattern and other relevant matters.

5.10 The buildings within the complex proposed for demolition are not widely visible and even then only in passing views.

5.11 First is the structure which the application identifies as Building 2, which our analysis has shown was formerly a Store Room and Van Shed dating to c. 1877 with what we take to be a later rebuilding of an earlier structure to its north. The principal elevation facing the courtyard cannot clearly be seen from public highway and is in any event has a utilitarian appearance.

5.12 The west party wall of that 1877 structure, gabled in profile, is visible on the boundary of no. 46 Gloucester Avenue over a relatively short stretch of public highway immediately west of the site. This is a glimpsed view of a blank party wall, the materials and character of which match the corresponding part of the plain side wall of the warehouse building. This party wall was formerly more widely exposed. Recent development seeking to complement the scale and proportions of nearby terraced housing has reduced the gap and hence the area within which this building makes any impression.

5.13 The passing awareness (if the observer is aware) of a bare, brick wall is not a negative characteristic. However, the elevation is expedient in its design, have no aesthetic or architectural quality. The materials are similar to those of the unadorned return of the main frontage building. There is little aesthetic, townscape or significant historical value in that relationship. It is lower than the frontage block as a matter of fact and so appears ancillary, but again this physical characteristic is, in itself not of of any genuine significance in NPPF terms. There is no mention of it in the appraisal. We conclude that the loss of this particular element has no real effect on the conservation area.

5.14 The assumed later Victorian building to its north, (past building 2 on the site of the 1858 Packing Shed) is scarcely visible from any public vantage point within the conservation area and so its demolition has an even smaller effect (which we think is not material for planning purposes).

5.15 The demolition of the former Smithy, the single-storey building at the southeast corner of the courtyard, likewise has a limited effect on this part of the conservation

area because of its scale and limited viewing possibilities. Indeed, the current building detracts from the townscape at this point because of its condition.

5.16 The buildings proposed for demolition can be seen from limited publicly accessible areas outside the CA, in particular from passing trains and the carparks to the north and east of the cutting. These are low quality viewpoints. The appeal decision recognises that these are not important views into the CA and are not identified in the CA Statement. Our assessment is that there would no material harmful effect from these locations as a result of the demolition or the redevelopment. The Inspector agreed (para 12).

5.17 The courtyard form of the complex itself makes a positive contribution to the area, for historical and visual reasons. But the proposals do not materially change its proportions or the way it is perceived from the street, and the proportions over all of the courtyard and its character would be preserved.

5.18 Conservation areas are designated for their architectural as well as their historic value. Hence the demolition of a building can, in appropriate circumstances, affect one basis for designation (the historic associations of a particular site). However, in this case, where the larger part of the complex is being retained and refurbished according to modern requirements, the site's historical associations, as communicated through the buildings and the courtyard form, will be maintained overall.

5.19 We conclude that the demolition proposed in this scheme would in itself have very little effect on the conservation area's character or appearance.

5.20 The Inspector identified that the demolition of Buildings 2 and 4 would result in some 'limited harm' to the Primrose Hill Conservation Area, but that this was 'less than substantial'. This harm therefore needs be considered against the benefits of the development, which the Inspector recognised includes the nature of the replacement building (para 10).

The Impact of the Proposals on the Appearance of the Conservation Area

5.21 The proposed new buildings would be visible over a small area within the CA, and then mostly from the private land comprising the courtyard:

- The location of the proposed development, set back from frontages has only very limited effects on the area's appearance and character;
- The development's scale is generally comparable with nearby heights of buildings; and
- The development's character is based upon traditional building forms (orthogonal gabled structures); and

- The development's plot pattern or grain is consistent with the existing pattern on the site; and

- The development's detailing and materials are consistent with the complex and complementary with the surrounding area (stock brick, slate and elevations treated as masonry elements into which openings have been formed).

- The development's uses, residential and employment are consistent with this part of the conservation area.

5.22 The proposed changes to the consented design are minor and, in our judgement, do not give rise to any materially different effect on the character or appearance of the CA, with the exception of the landscape improvements which are an improvement on the consented scheme:

- The adjustments in the proportion of office to residential use will not have a material effect on the character or appearance of the CA.

- The slightly larger rear extension to Building 1 to accommodate a stair and lift core will not be visible from publicly accessible spaces in the CA.

- The roof of Building 1 is behind a parapet so the proposed roof lights will not be visible from the CA (see the verified views).

- The single-storey increase in scale of replacement Building 2 and changes to its massing will likewise have no materially greater effect on the CA, as demonstrated in the views in **Appendix 10.0**; view 2 is the only view where the change in scale is perceptible and the change is so slight as not be noticeable. We include view 2 from the consentes scheme as Appendix 12.0 to illustrate this point. The changes in the scale and massing affect the back corner of the building complex, furthest from the street, so will not alter the visual impact of the consented scheme. The visual impact of the scheme is discussed in more detail below.

- The south side of Building 3 can be glimpsed in views from the street between Buildings 1 and 5, and though the opening in Building 1 (to a much lesser extent). The adjustments in the pattern of fenestration and doors are minor details and ones that we consider will enhance this elevation but will not have a materially different effect on the character and appearance of the CA than the consented scheme.

- The single-storey link structure between Buildings 4 and 5 proposed in the consented scheme may have been glimpsed from the street. It is now proposed that this area should be private amenity space enclosed by railings.

The effect of this change on the CA is minor, although it will mean that Building 5's origin as a separate house is clearer.

- The landscaping improvements, including the introduction of soft landscaping and planting of trees, will be glimpsed from the street in the gaps between Building 1 and 5, and will have a minor beneficial effect on the character and appearance of the CA, an improvement on the consented scheme.

5.23 A number of the changes in the scheme respond to concerns raised by officers at LB Camden about the consented scheme: dormer windows and light wells are no longer proposed and the improvements in the courtyard façade of Building 3 respond to officer comments.

Visual Impact

5.24 The position of the proposals will ensure that there will be only very limited visual effects on the surrounding townscape, and hence on the appearance of this part of the conservation area. We now consider the effect of each of the three components in turn, again focusing on the character of the area as perceived from public vantage points.

5.25 The applicant has commissioned the Visualiser to produce six verified accurate visual representations (five wirelines and one render) so the extent and scale of impact can be accurately ascertained (these are reproduced in **Appendix 10.0**). A non-verified image of the courtyard has also been produced, see **Appendix 11.0**.

Past-Building 2, the Six-Storey Block beside the Railway

5.26 This element of the proposals has the least visual impact of all three elements. Sightline studies show its upper part will be largely occluded in the longer view along Edis Street. The new building on the site of Building 2 (the former Store and Van Shed of 1877) will likewise occlude any view of it from that short stretch of Gloucester Avenue providing a glimpsed passing view of the site. The verified wirelines at views 2, 3, 4 and 5 of **Appendix 11.0** demonstrate that this element will not have any material visual effect within the conservation area.

5.27 The location of this building in the least visible position has been appropriately and sustainably used to gain additional accommodation and in so doing accords with London Plan policies on design and residential land-use optimisation at 3.3, 3.4, 4.1 and 4.2c. The single-storey addition to this block now proposed and the increase in massing adjacent to the railway are acceptable for the same reasons.

5.28 This element also adopts a more contemporary character in design than the other two elements, albeit its regular form and prevailing material (brick) will complement the industrial heritage of the site. The frontage building itself has an orthogonal geometry and its roof is hidden by a parapet so it has a horizontal character. Accordingly, the general character of the courtyard (which is a private space within the conservation

area) will be maintained, and the scale of this element will not overbear on it in any way.

Part-Building 2, the Four-Storey Gabled Block Enclosing the Courtyard to the Northwest

5.29 From the southern extent of Edis Street, at the junction with Chalcot Road, only the very top part of the sloping roof of this building will be visible behind the parapet of the 1871 polychrome building. This is illustrated in view 2 of Appendix 10.0. That scenic effect will diminish rapidly as one walks along the road, so that there will be no effect over most of its length.

5.30 That effect will not make a material impression within a well enclosed, well defined street scene because of the scale of the buildings, their distinctive detailing, and the street trees. To the extent that one notices this roof at all, then we conclude there will be no harm to the appearance of the area and certainly none to its character.

5.31 There will likewise be a very minor glimpsed view from Gloucester Avenue to the south (view 4), from the canal bridge, and if one were to look hard to discern this element, what one will see is a brick building, beneath a gabled roof and possibly the more rectilinear form of the 5-storey block, in the context of the recent contemporary-styled building to the east. Again, to the extent that the effect is perceptible or noticeable at all, it would not be harmful or intrusive in any way, nor overbearing or otherwise detrimental to the general scale of development appreciated in this townscape. In any event this is very much an incidental view.

5.32 The only material visual effect this component will be from an ability to perceive an increase in scale from the passing view to the north of the site. Here, however, the traditional characteristics of the new residential block – gabled, sloping roof, openings formed in a brick clad solid wall – will ensure the effect is not intrusive in any way. The character of the architecture is not demonstrative or extrovert, but simple and quiet. This scale will be perceived at a point where there is already a marked change in townscape character, and one which has a positive value within the area.

5.33 The only change in townscape terms perceived from this passing view will be the change from the diminution in scale from the frontage block that previously existed, with a corresponding modest increase in visibility. We do not see any basis for suggesting that such changes cause material harm. The fact of a small increase in visibility cannot of itself be harmful. A change in an existing ‘scale gradient’ can have an effect, but only generally if it had been a significant characteristic of a part of an area. We cannot see that it is here. The oblique nature of the view and its limited extent means that the element proposed will not overbear on the scale of the recent development that completes the terrace in this location.

5.34 For the reasons set out above, we discern no material harm arising from this element of the scheme conclude that the character of the area is preserved in line with statute

and London Plan policies 7.4, 7.8 and 7.9 as well as with Policies CS14 and the NPPF. Likewise, we consider that Policy DP24 is satisfied because the proposals will draw on forms and materials that are characteristic of this part of the conservation area. The new structures are not extensions, but new parts of a large complex, whose overall proportions and architectural coherence will be preserved in line with para 24.13 and DP24. Policy DP25 is satisfied because we do not consider there would be any harm to cultural heritage value, but even if there were, it is clear it would be very limited, and can readily be justified in line with NPPF paragraph 134 on the basis of countervailing benefits. For reasons identified in relation to the demolition of Buildings 2 and 4, the change in the view towards the conservation area across the railway lines will not be harmed.

5.35 The Inspector concluded that the impact of the consented new buildings on the CA would be 'at worst, neutral' (para 16). We consider that the proposed changes to the scheme will result in some minor enhancements to the CA. Even if a different judgment were to be reached from the one that we are satisfied is correct, and any material harm had arisen, one would have to define the degree of harm to the conservation area and that must, we suggest, be very limited, as concluded by the Appeal Inspector. That limited harm would then have to be balanced against the very substantial other benefits of the proposal, in line with the approach in paragraph 134 of the NPPF.

Building 4, behind no 44A Gloucester Avenue

5.36 The replacement building for building 4, the former Smithy, takes some of its scale reference from the adjoining buildings to the south, and is only a single-storey higher than the building to the front, no. 44A. At three storeys it is also comparable to the prevailing storey heights in the conservation area. The proposed height of this building is shorter than in the consented scheme.

5.37 Once again, the design of this takes its general form from traditional architecture: masonry elevations with openings formed in walls, and slate-covered, gable roof. All of this is complementary with the industrial heritage of the site and the formats of buildings found elsewhere.

5.38 This proposed new building has a significant beneficial effect on the passing view into the site, better defining the extent of the site and increasing enclosure to the courtyard without overbearing on that space. Its scale is consistent that of the adjoining and nearby traditional developments, and the distance between it and the refurbished 44A will prevent the one from overbearing the other or appearing discordant in any way.

5.39 Only the sloping, slate roof of this building will be visible above no. 44A in the significant view identified in the appraisal, namely that east along Princess Road. This is modelled as View 1 of **Appendix 10.0**. That visibility of the slate roof occurs when one is furthest from the site and it inevitably diminishes quickly as one moves towards

the site, and approaches (and appreciates) what would be the restored façade of the existing derelict house, itself a three-bay composition of traditional type. The gable of the new building is parallel that of no. 44A. As a result of the orientation of this new element, its materials, the roof form, its scale and general character, we consider that there will be no harmful effect on the conservation area's appearance in any of the views in which it might be visible (including from Princess road). Moreover, even where it is perceived, the building will not be discordant in any way. Thus from parts of Princess Road, where the slate roof will be visible, one will see the upper part of a slate, sloping roof above parallel to the existing one. The result will not be discordant but, rather, accord with the form and materials of the existing buildings.

5.40 Accordingly this element of the proposal accords with development plan policies in the London Plan, including 7.4, 7.8 and 7.9 in particular as well as Policies CS14, DP24 and DP25, and also NPPF, having particular regard to the considerations outlined in the discussion of DP25 in section 4.0.

Countervailing Benefits of the Proposals

5.41 The Inspector concluded that the net effect of the demolition and redevelopment in the consented scheme would cause some 'limited harm' to the character and appearance of the CA, and that this would be less than substantial (para 13). The current application proposes to demolish the same buildings and the changes to the design of the replacement buildings are minor and would not change this conclusion.

5.42 Paragraph 134 of the NPPF requires decision-makers to balance the harm to heritage assets against the public benefits of the scheme.

5.43 Before undertaking this exercise, in light of the Barnwell judgement and the statutory provision, we acknowledge that any harm to the CA is a matter of considerable importance and weight. We also note that the Barnwell judgement (in paragraph 128) and NPPF (paragraph 132) state that the strong presumption against allowing development which causes harm to a listed building or conservation area lessens in weight as the importance of the heritage asset decreases and if the harm is less than substantial rather than substantial, and again if the harm in on the 'limited' end of the scale as the Inspector concluded in this case.

5.44 We note that the corollary of this is that any works that benefit or enhance the character and appearance of the CA are also a matter of considerable importance and weight.

5.45 There are two kinds of countervailing benefits of the scheme: heritage benefits and general land use planning benefits.

Heritage Benefits

5.46 First, the proposals restore and refurbish no. 44A, a derelict building that is the most prominent remnant of the significant first phase of development. This building's condition detracts from the area. This aspect of the proposals benefits the conservation area. This benefit will include increased vitality in the conservation area along with the provision of housing. The Inspector concluded that these works, also included as part of the consented scheme, would be: 'a significant benefit to the streetscene and wider area as it is currently unused and visually unattractive' (para 11, first bullet point).

5.47 Second, the refurbishment of the phase one factory ranges of 1858 (Building 3) likewise enhance the CA, albeit to a limited extent due to their limited visibility. These buildings require significant investment for their use, investment disproportionate to their value. Bringing them into active use will animate the courtyard and that, in turn, will bring vitality into this part of that conservation area. The proposals optimise their use. The Inspector concluded that these works 'would improve its appearance and safeguard its future as a feature of views into the courtyard from the road' (para 11, third bullet point).

5.48 Third, the refurbishment and improvement of the 1871 Post Office range (Building 1) likewise gives these buildings a secure future use (through residential conversion), again achieving the optimum viable use. The Inspector concluded that these works 'would secure its beneficial use as a positive feature of the area' (para 11, second bullet point).

5.49 Fourth, the landscape of the courtyard will be improved, enhancing the appearance of the buildings and those parts of the conservation area which enjoy a view into it. The Inspector concluded that these would enhance the appearance of the courtyard (para 11, last bullet point).

5.50 As set out in Statute and reinforced by the Barnwell judgement (or at least the logical implications of it), these beneficial effects on the CA are a matter of considerable importance and weight.

Other Planning Benefits

5.51 The Planning Statement outlines the proposals' land use planning benefits. NPPF confirms that such benefits are relevant to the grant of consent for proposals that cause harm to heritage assets (if harm were considered to arise from what is proposed). The application proposes to create 40 residential units more than 2.5 times than the number in the consented application (17 units).

5.52 In addition, the Planning Statement explains the viability of developing the site, that without the additional value delivered by the scheme, improvements to the fabric of existing buildings (beyond basic repair and maintenance) would not be forthcoming. Thus without the upgraded windows and improved insulation of the relaid roof the environmental performance of these older buildings would not be delivered.

Conclusion on Effect on CA

5.53 With respect the consented scheme, the Inspector concluded that the limited harm to the CA would 'be more than outweighed by the public benefits of the scheme leaving an overall benefit resulting from the proposals' (para 16).

5.54 The level of harm to the CA is the same in the current application, that is, limited and less than substantial. The public benefits are increased because the proposals will create more than 2.5 times the number of residential units, with improved accommodation and sustainability standards, so that the residential now is targeting Lifetime Homes standards, Code Level 4 and BREEAM Domestic Refurbishment, Very Good. The limited harm is therefore more than outweighed by the benefits of the scheme.

5.55 Accordingly, we conclude Policies 7.4, 7.8 and 7.9 of the London Plan are met. Equally we conclude that the proposal accords with policy CSI4 and the policies in paragraphs 129, 131, 132 and 134 of the Framework, and the accompanying relevant parts of Policy DP25 are satisfied.

Setting of Listed Buildings

5.56 In relation to the setting of nearby listed buildings the proposal will have a beneficial effect by improving the appearance of two locally notable buildings on the frontage insofar as the site is visible from the listed buildings. The proposed new structures behind will have a limited setting effect on the listed pub, because of their scale and position, and because of the commanding, confident character of the public house. The other listed building closest to the site (the Primary school) is set some distance away and there will accordingly be a limited setting effect on it arising from the proposals. These setting effects would not we conclude be noticeable to the casual observer.

5.57 Accordingly, we conclude Policy 7.8 of the London Plan is met because the proposals preserve or slightly enhance the setting of the nearby listed buildings. Equally we conclude that the proposal accords with policy CSI4 and the policies in paragraphs 129, 131 and 132 of the Framework, and the accompanying relevant parts of Policy DP25 are satisfied.

Conclusions

5.58 In conclusion, then, the following points weigh in favour of the application in respect of heritage matters.

5.59 First, two buildings that make a positive contribution to the CA are restored and refurbished, improving the character and appearance of the conservation area and the setting of nearby listed buildings.

5.60 Second, the buildings proposed for demolition are of lesser significance and the replacement structure makes more efficient use of the site as part of a balanced scheme which will improve the quality of employment space the site can offer and deliver affordable housing on a previously developed site in a sustainable location.

5.61 Third, the effects of the demolition and of the proposed new structure are extremely limited by virtue of interposing development and the alignments of streets. Where the proposals are visible, then they will be associated with the strip of industrial and contemporary development which characterises this part of the conservation area.

5.62 Fourth, it is considered that the replacement building is of good quality design which will contribute something of interest to an area where such buildings provide an interesting counterpoint to the established run of speculative, historic residential development.

5.63 This report concludes that the harm arising from the demolition of Buildings 2 and 4 is limited and less than substantial. There is little effect on the designated asset, (i.e. the CA), and the most important buildings, will not just be kept but will be refurbished and given a secure future use. The land-use planning benefits are also significant considerations of weight (see the Planning Statement). We conclude that the proposals are consistent with national and local planning policy on the historic environment and Sections 66(1) and 72 (1) the Planning (LB & CA) Act 1990.

6.0 SOURCES

- SMR Search within area of effect of the site;
- Primrose Hill Conservation Area Statement (PHCAS) (January 2001);
- Pevsner-Cherry, Buildings of England: London 4:North;
- Series Historic OS (first, second, third and fourth editions);
- DCLG, NPPF (2012)
- English Heritage, Understanding Place: Conservation Area Designation, Appraisal and Management (2011)
- English Heritage, The Setting of Heritage Assets (2012);
- Previous Historic Buildings Statement prepared by Dr Mervyn Miller (August 2009) - baseline information commissioned in support of previous application.

Appendix 1

Site Location Plan

A
S.01

Site Location Plan

1:500 @ A1 ; 1:1000 @ A3

0 10m 20m 30m 40m 50m 60m

N

Revisions

A	30/01/2015	Submitted for Full Planning APplication

Client: Victoria Square Property Company Limited

Project: 44 Gloucester Avenue
London NW1 8JD

Drawing Title: Site Plan
General Arrangment

21st Architecture Ltd
Twenty First Architecture Ltd,
314 Goswell Road,
London,
EC1V 7AF
Tel: +44(0)20 7952 0252
www.21starchitecture.com

Status: Planning
Drawn: TJS
Checked: RD
Scale: 1:500 @ A1, 1:1000 @ A3
Date: Nov 2013
Drwg. No. 173_S_ 00
Revision: A

Appendix 2

Extracts from the LB Camden Primrose Hill Conservation Area Statement

January 2001

PLANNING HISTORY

The Primrose Hill Conservation Area was designated on 1st October 1971 and extended to include the north part of Erskine Road on the 18th June 1985. The designation report notes that the character of the area "is made up of a series of well laid out Victorian terraces. It is residential in character, although there are a number of local industries, and it has its own shopping centres, a primary school and, because of the vicinity of Primrose Hill, is extremely well provided with open space".

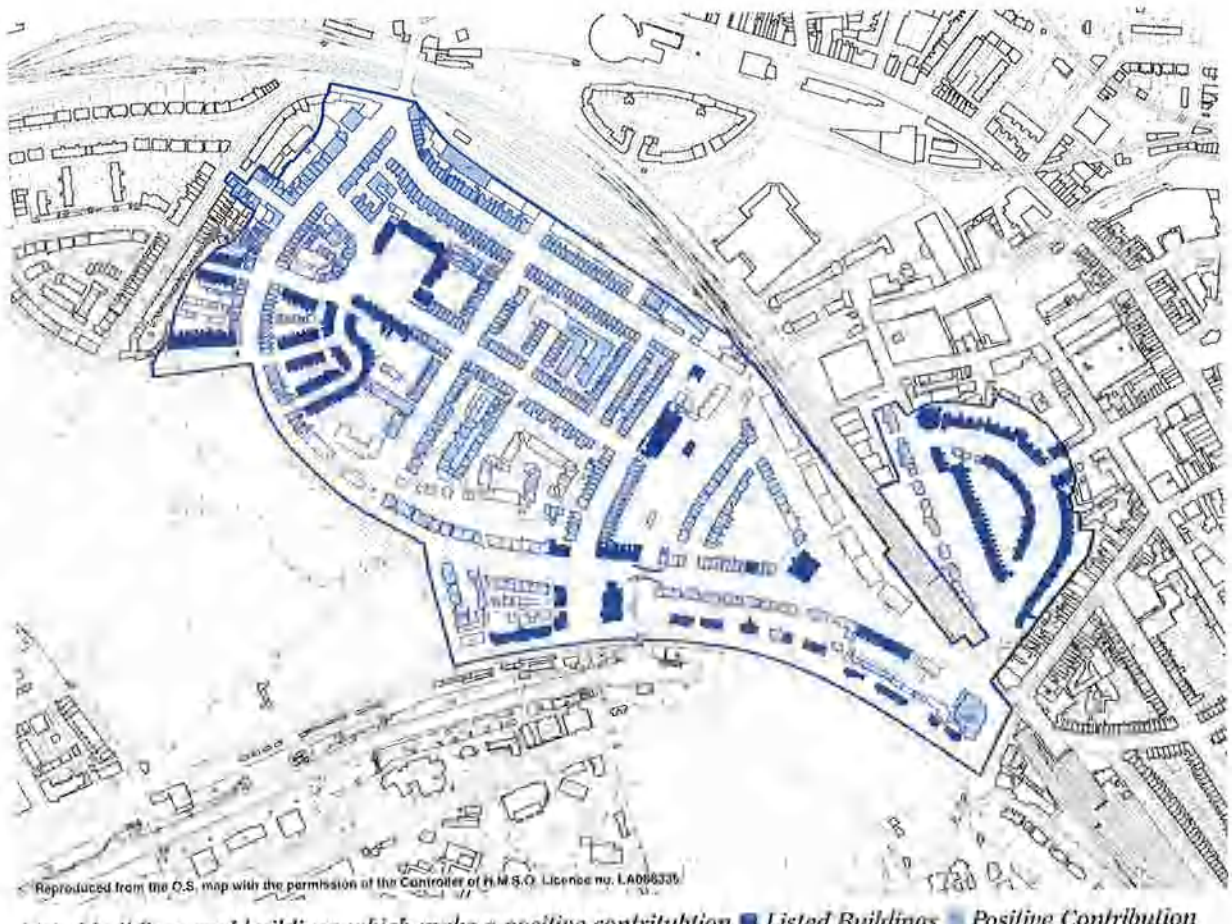
On 3rd March 1983 Permitted Development Rights relating to single family dwelling houses and minor operations, were withdrawn by an Article 4 Direction under the Town and Country Planning General Development Orders 1977 (now updated as General Permitted Development Order 1995). The operation of the Article 4 direction is explained further in the Guidance section of this document.

For the purposes of this Statement the Conservation Area is divided into four sub-areas entitled:

- Regent's Park Road South
- Central Area
- Regent's Park Road North
- Gloucester Crescent

Sub areas

Edis Street	1-31 consecutive
Egbert Street	1-13 odd, 2-14 even
Eglon Mews	1-8 consecutive
Erskine Road	1-4 consecutive, Leeder House, property to rear of 91 Regent's Park Road
Fitzroy Road	1-57 odd, 2-50 even, works at 8 & 10
Gloucester Avenue	1, 33, 35, wall to side garden of 90-105 Darwin Court, 39, tower to rear of 42A, building located between 42 and 44, 43-63 odd, 44, 52-150 even (including Primrose Hill Workshops at No.110), 67-183 odd, Fitzroy Bridge
Gloucester Crescent	50, 51, 51A
Hopkinsons Place	1-29 consecutive
Kingstown Street	1-5 odd
Manley Street	4-16 even
Mayfair Mews	All buildings
Oval Road	1F, 3-31 odd
Primrose Hill Studios	1-12 consecutive
Primrose Mews	1-7 consecutive
Prince Albert Road	9, Water Meeting Bridge
Princess Road	1-65 odd, 2-34 even, 42



Listed buildings and buildings which make a positive contribution ■ *Listed Buildings* ■ *Positive Contribution*

Appendix 3

List Descriptions

List Entry Summary

This building is listed under the Planning (Listed Buildings and Conservation Areas) Act 1990 as amended for its special architectural or historic interest.

Name: THE ENGINEER PUBLIC HOUSE AND ATTACHED WALL

List Entry Number: 1342071

Location

THE ENGINEER PUBLIC HOUSE AND ATTACHED WALL, 65, GLOUCESTER AVENUE
THE ENGINEER PUBLIC HOUSE AND ATTACHED WALL, PRINCESS ROAD

The building may lie within the boundary of more than one authority.

County: Greater London Authority
District: Camden
District Type: London Borough
Parish:

National Park: Not applicable to this List entry.

Grade: II

Date first listed: 11-Jan-1999

Date of most recent amendment: Not applicable to this List entry.

Legacy System Information

The contents of this record have been generated from a legacy data system.

Legacy System: LBS

UID: 477223

Asset Groupings

This List entry does not comprise part of an Asset Grouping. Asset Groupings are not part of the official record but are added later for information.

List Entry Description

Summary of Building

Legacy Record - This information may be included in the List Entry Details.

Reasons for Designation

Legacy Record - This information may be included in the List Entry Details.

History

Legacy Record - This information may be included in the List Entry Details.

Details

CAMDEN

TQ2883NW GLOUCESTER AVENUE
798-1/75/1775 (South West side)
No.65

The Engineer Public House and
attached wall

II

Includes: The Engineer Public House and attached wall PRINCESS ROAD.
Public house. c1845-50. Built for Calverts the brewers. Brown stock brick with stucco ground storey and dressings. Slate roof. Italianate style.
EXTERIOR: square composition of 3 storeys on all sides, with strong bracketed cornice and parapet and heavy quoins at angles. Fronts towards Gloucester Avenue and Princess Road with stuccoed facade and windows to bar along ground storey, probably later C19 and incorporating projecting iron light fixtures in the form of dragons left and right of entrances; upper portions with 3 windows with stucco surrounds and keystones on each of 2 storeys, the centre windows at first-floor level having swept sides and pediments. The 2 rear facades less symmetrical, with external chimneybreasts protruding and breaking through parapets.
INTERIOR: the bar interiors have lost all fittings of special interest save for their cornices, but the exterior makes for a good example of an early Victorian public house.
SUBSIDIARY FEATURES: high stuccoed wall continues along Princess Road in front of yard.

CAMDEN

TQ2883NW PRINCESS ROAD
798-1/75/1775 The Engineer Public House and
attached wall

II

See under: No.65 The Engineer Public House and attached wall GLOUCESTER AVENUE.

Listing NGR: TQ2833983966

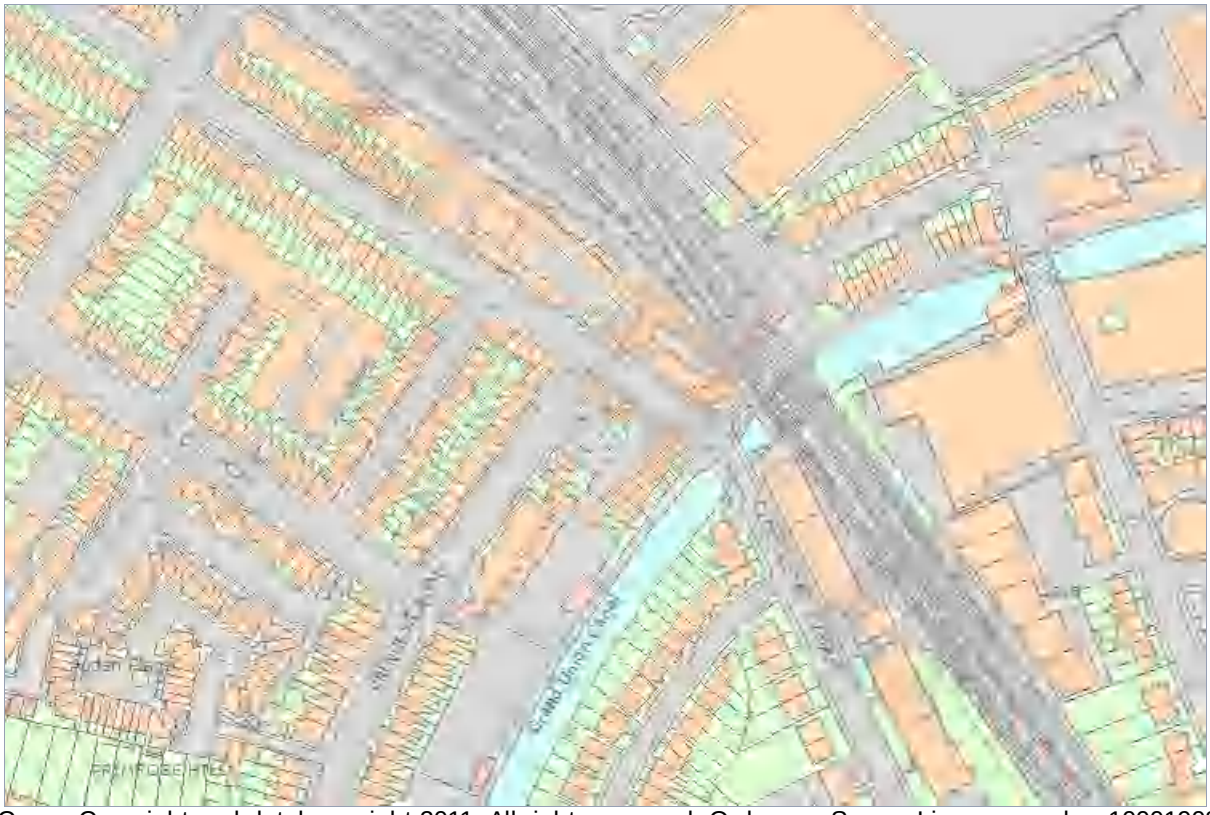
Selected Sources

Legacy Record - This information may be included in the List Entry Details.

Map

National Grid Reference: TQ 28339 83966

The below map is for quick reference purposes only and may not be to scale. For a copy of the full scale map, please see the attached PDF - 1342071.pdf



This copy shows the entry on 30-Jan-2012 at 11:45:38.

List Entry Summary

This building is listed under the Planning (Listed Buildings and Conservation Areas) Act 1990 as amended for its special architectural or historic interest.

Name: PRIMROSE HILL INFANTS SCHOOL

List Entry Number: 1139081

Location

PRIMROSE HILL INFANTS SCHOOL, PRINCESS ROAD

The building may lie within the boundary of more than one authority.

County: Greater London Authority
District: Camden
District Type: London Borough
Parish:

National Park: Not applicable to this List entry.

Grade: II

Date first listed: 14-May-1974

Date of most recent amendment: 11-Jan-1999

Legacy System Information

The contents of this record have been generated from a legacy data system.

Legacy System: LBS

UID: 477811

Asset Groupings

This List entry does not comprise part of an Asset Grouping. Asset Groupings are not part of the official record but are added later for information.

List Entry Description

Summary of Building

Legacy Record - This information may be included in the List Entry Details.

Reasons for Designation

Legacy Record - This information may be included in the List Entry Details.

History

Legacy Record - This information may be included in the List Entry Details.

Details

CAMDEN

TQ2883NW PRINCESS ROAD
798-1/75/1350 (East side)
14/05/74 Primrose Hill Infants School
(Formerly Listed as:
PRINCESS ROAD
Primrose Hill Junior & Infant School)

GV II

Board School, now an Infants School. c1885. By ER Robson. For the School Board for London. Red brick ground floor (rusticated) and gables; 1st and 2nd floors, yellow stock brick. Stone and red brick dressings. Tiled roofs, steeply pitched with scroll enriched gables terminating in pedimented features. Flemish Renaissance style.
3 main storeys with attics and basements. Long building with irregular fenestration. Central gabled bay of 4 windows; to left, narrow 2-window gabled bay, wide, projecting step gabled 2-window bay and 2-window bay step gabled on return; to right, recessed 5-window bay, gabled above 3 left windows and on return, 2-window recessed bay. Plain stone surrounds to entrances. Mostly transom and mullion effect flush framed windows with gauged brick flat arches. Windows extending into gables, segmental-arched with keystones. Left hand, stepped gable bay with ground and 1st floor windows in shallow round-arched recesses. INTERIOR: not inspected.

Listing NGR: TQ2830483909

Selected Sources

Legacy Record - This information may be included in the List Entry Details.

Map

National Grid Reference: TQ 28304 83909

The below map is for quick reference purposes only and may not be to scale. For a copy of the full scale map, please see the attached PDF - 1139081.pdf

This copy shows the entry on 30-Jan-2012 at 11:49:56.

Appendix 4

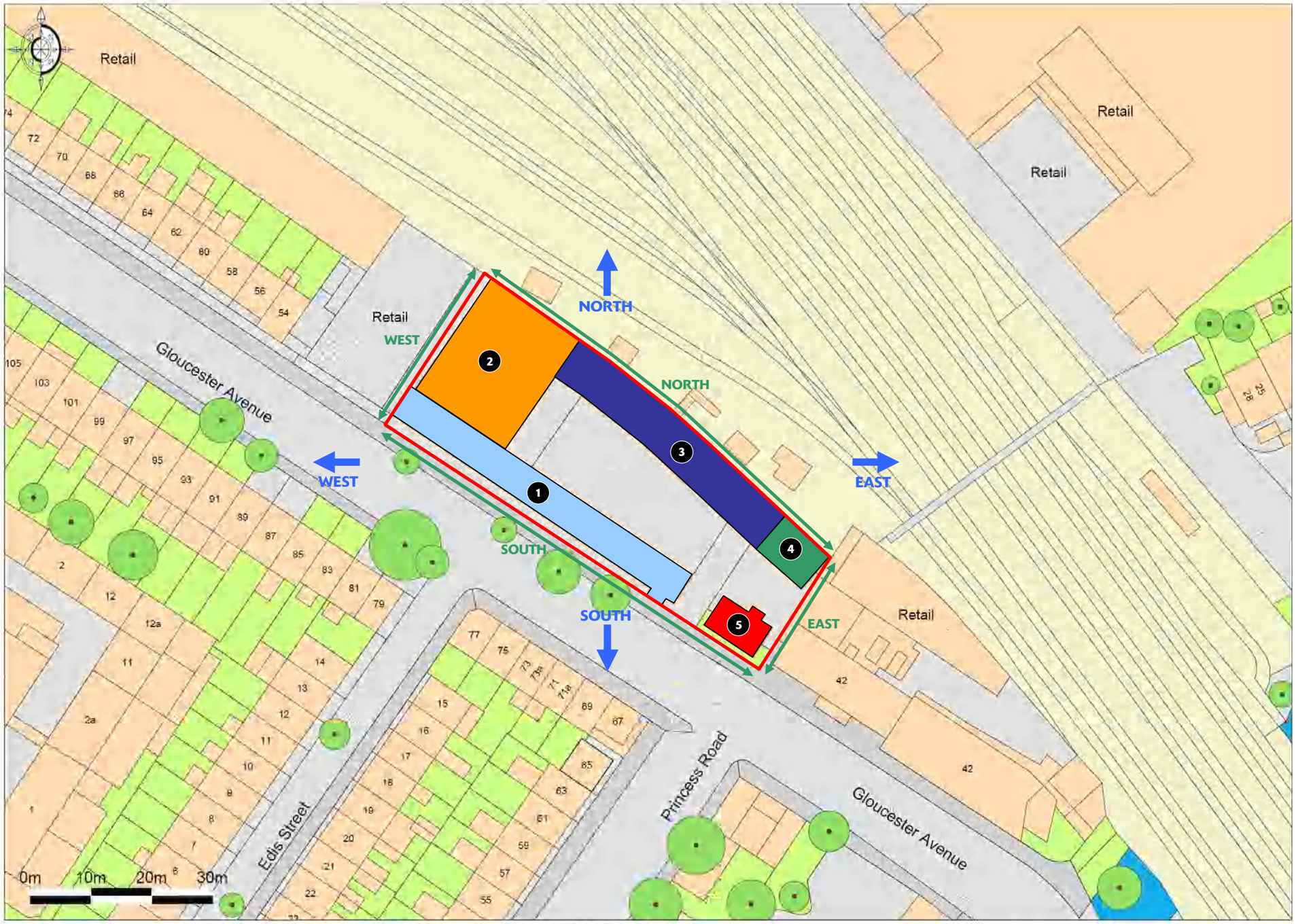
Buildings and Orientation Map

November 2011

CHP Management Ltd

44 GLOUCESTER AVENUE APPEAL

BUILDINGS AND ORIENTATION MAP



- APPLICATION SITE
- EXTANT BUILDING NAMES
- DIRECTIONS
- BOUNDARY NAMES

Not to Scale

November 2011

MONTAGU EVANS

CHARTERED SURVEYORS

Clarges House
6 – 12 Clarges Street, London, W1J 8HB
Tel: 020-7493 4002 Fax: 020-7312 7548

Appendix 5

Photographs of Site and Surroundings

1. Aerial Photographs of the Surrounding Area

Photograph 1.1

Wide Aerial

Source – www.maps.google.com

Photograph 1.2

Aerial

Source – www.maps.google.com

Photograph 1.3

Aerial Looking North

Photograph Source – www.bing.com

Photograph 1.4

Aerial Looking East

Photograph Source – www.bing.com

Photograph 1.5

Aerial Looking South

Photograph Source – www.bing.com

Photograph 1.6

Aerial Looking West

Photograph Source – www.bing.com

2. Photographs of the Site and Surrounding Area

Photograph 2.1

Gloucester Avenue

Long distance view looking south east

Photograph 2.2

Gloucester Avenue

Looking south east

Photograph 2.3

Gloucester Avenue

Looking south east

Photograph 2.4

Southern Elevation of Building 1 seen from Gloucester Avenue

Photograph 2.5

Western Elevation

Photograph 2.6

Southern Elevation of Building 1 seen from Edis Street

Photograph 2.7

Building 3 seen from courtyard

Photograph 2.8

Buildings 2 and 3 seen from courtyard

Photograph 2.9

Buildings 3 and 4 seen from courtyard

Photograph 2.10

Southern Elevations of Buildings 1 and 5 seen from corner of Princess Road and Gloucester Avenue

Photograph 2.11

Gloucester Avenue

Looking north west

Photograph 2.12

View looking south west from Morrison's Servicing Access

Photograph 2.13

View looking south west from boundary of Morrison's Supermarket

PHOTOGRAPHS OF SITE & SURROUNDINGS

Appendix 6

Extracts from Dr Mervyn Miller, Conservation Area Appraisal in respect of

44 Gloucester Avenue, London, August 2009

Dr Mervyn Miller
CHARTERED ARCHITECT AND TOWN PLANNER
11 Silver Street, Ashwell, Baldock, Herts SG7 5QJ (01462) 742685
Email mervarch@aol.com

NO. 44 GLOUCESTER AVENUE, ('THE COURTYARD')CAMDEN, LONDON NW1

SECOND DRAFT

1. This Report has been prepared to provide an Appraisal of the proposed development of No. 44 Gloucester Avenue, Camden LB, London NW1, and its impact upon the character and appearance of the Primrose Hill Conservation Area. I have liaised with PKS Architects in the fine tuning of the design.

2. As a Chartered Architect and Town Planner, I have 35 years experience of planning and the historic built environment. In addition to five degrees from three universities, I am also, in addition to longstanding RIBA and RTPI membership, also a Member of the Institute of Historic Building Conservation and of The Victorian Society.

3. I am long familiar with the area, having lived in nearby Belsize Park in the early 1970s, while my experience as a local planning principal conservation officer was spent in Hertfordshire from 1972-87, I served as RTPI-appointed Director of Hampstead Garden Suburb Trust from 1979-2000. I undertook extensive consultancy work for English Heritage during the 1990s, including spotlisting casework in Greater London. As a sole principal in private practice since 1988, I have undertaken numerous consultancy projects, building appraisals, appeals and public inquiries across several London Boroughs.

Historical Background and Building Appraisal

4. PKS Architects have undertaken extensive desktop research using the evolving editions of the Ordnance Survey and other maps of the area. These give a specific account of the history of the site, which appears to have been built as a warehouse and offices in connection with the Postal or Government Telegraph services, by which it is variously shown on the 1890s maps. Behind the site to the north-east, are the railway tracks, and site of a former extensive Goods Shed, belonging to the London and North Western Railway. I have supplemented the desktop research with additional work in the Camden LBC Local History Centre, and a site inspection.

5. The First Edition OS Map of 1870, would have been surveyed in the preceding year or two. It shows that the land to the south of the principal London and North Western Railway tracks from Euston to the Midlands and North-West was in course of development. The LNWR had originated as the London to Birmingham Railway in the late 1830s, and had post-dated development further south-east in Park Village and Mornington Crescent: the development north of Camden Parkway, along Gloucester Avenue and with Primrose Hill appears to have been laid out after the railway easement had been purchased.

6. The nearby houses along Gloucester Avenue and along Fitzroy Road, Edis Street and Chalcot Road are visibly designed in the late Georgian tradition, but probably date from the 1840s or 1850s. The rectilinear layout of the area is also typical of its date. The freehold owner of the land was Eton College, who developed extensively in Primrose Hill, working northwards from Camden Parkway along the railway, with the development north of Regent's Park Road dating from the 1860s/1870s.

Individual Buildings

7. The site contains two frontage buildings, and a number around the rear perimeter of the site. In their Site Analysis PKS have numbered the building elements in a clockwise sequence around the site, which I have adopted in my appraisal below.

Building No. 1

8. No. 44 Gloucester Road is a local landmark, three storeys high built of yellow brown London stock brick, with a low pitched hipped-end Welsh slated roof, concealed from the street frontage by a tall parapet, but with open eaves at the rear. The height to the top of the parapet is apx. 14 m., while the building occupies a remarkably long, slender footprint, apx. 54 x 5 m. The building is set back apx. 5.5 m. from the kerb line of Gloucester Avenue, behind a railed area enclosing the basement.

9. The frontage building is subdivided into 15 bays, with the central 5 breaking forward. The central bay contains a carriage way entry to the rear courtyard, and above the windows have a central sash, flanked by narrower windows at either side. Apart from this, and the incidence of one blank recess on the first floor left hand bay of the centre, the windows are all tall, 12 pane double hung timber sashes, recessed into brick reveals. Above the window heads are segmental brick arches and there are projecting plat bands immediately below the window cills.

10. The building is constructed of yellow/brown London stock brickwork laid in Flemish bond. The dressings are red brick, including the arched window heads, plat bands and a cornice below the parapet, which includes moulded bricks. This is the only trace of ornamentation on the entire front façade. The end elevations, apart from the turned ends of the bands and cornice. The rear elevation has the same distinctive fenestration, but omits the banding, and has a simplified cornice, all of which is in stock bricks. Altogether this is a fine example of the 19th century functional tradition. It has a strong conservation area presence and intrinsic significance.

Building No. 5

11. Next, to the right of the present vehicular access to the site is a two storeyed house with a simple 3 bay façade and a low pitched end-gabled Welsh slate roof, with a verge parapet and flanking chimneys. Built of stock brick, the front elevation appears to have later been stuccoed, and there are stuccoed architrave surrounds to the windows, which are double-hung timber sashes. The gap between the end of this house and the main frontage building was originally a private garden, as shown on the 1870 Ordnance Survey Map. Despite alteration of the front elevation and moderate intrinsic significance, it has a positive impact on the conservation area.

12. The 1870 map indicates that perimeter development of the site had been completed. Given the absence of earlier maps, drawings or photographs, it is difficult to be certain when building occurred, or was complete. The inclusion of contrasting red dressings, and their form, suggests that the 1850s/1860s was the most likely date of construction. A later building, even one with such a functional character, would have been more likely to have more exuberant dressings, with a hint of stylistic eclecticism, and moreover, plate glass single pane sashes, rather than a continued incidence of subdivision into small panes.

Building No. 2

13. The 1870 Ordnance Survey Map shows a consistent shallow range of buildings around the north-west end of the site. However, by 1894, a deep building had been constructed at the end of the site, with only narrow gaps between it and Buildings 1 and 3. This was the origin Building No. 2. However, during the Second World War, the end of the terrace beyond were damaged beyond repair by enemy actions, and the following four were 'repairable at cost'. The site of the three most damaged houses was cleared and redeveloped for the single storey building at present on site. Although the robust frontage building (No. 1) does not now appear to have been damaged, it appears that Building No. 2 behind, and parts of the northern end of No. 3 were reconstructed after the war. The 1952 Ordnance Survey Map presents a more integrated footprint, with total infilling between the two. The seven floor plans indicate that the thicker brickwork of the external wall to the courtyard side had been demolished.

14. What remains of Building No. 2 are principally the main external gables, one visible from the internal courtyard, and the other above the single storey postwar building to the north-west. The elevation to the courtyard has been disfigured by a canopy at first floor level protecting the loading bay below. This building is largely concealed, in sensitively altered, and detracts from the setting of the remainder of the buildings on the site.

Building No. 3

15. However, the buildings at the rear are of a more utilitarian character, and have also been more extensively altered. The rear range of buildings is predominantly two storeyed, built of yellow/brown London stocks, with Welsh slated roofs. The building is subdivided into four bay lengths, with firestop parapets taken above roof level, as required under the London Building Act Byelaws. This range was extensively windowed, presumably maximise the natural light available, at a time when artificial gaslight gave poor illumination. The standard cast-iron lintels suggest that the window openings were original, although those now existing appear to be replacements. On the ground floor there are doors in each 4 bay section, which again appear to be original, even where the doors have clearly been replaced. The first floor has similar windows facing the railway.

Building No. 4

16. Beyond the south end of Building No. 3 there is a 3 bay single storey continuation, stock brick built, with a corrugated asbestos roof. Since the development shown upon

the 1870 OS Map indicates continuity to the site boundary in the south-east corner, it is likely that this is the original form, minus the Welsh slate roofing of the remainder. Obscured from the frontage behind Building No. 5, this building is of insignificant conservation area presence or intrinsic merit.

Guidance on Conservation Area Appraisals

17. Advice on the evaluation of unlisted buildings in conservation Area is now given in Appendix 2 of *Guidance on Conservation Area Appraisals* (English Heritage 2005: hard copy 2006). The text is identical to that originally included in *Conservation Area Practice*, published in October 1995. I have substituted numbered criteria for bullet points for ease of reference.

Building No. 1

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

No architect has been identified with involvement with the design of this building.

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

This generally has qualities of age and style reflecting those of adjacent buildings, albeit that the design is characteristic of a more functional building than the prevailing residential terraces.

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

There are no listed buildings close to this building.

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

Both individually and as part of a group this building does serve as a reminder of the incremental growth of Primrose Hill from the 1840s onwards.

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

The building has some association with the road layout undertaken at the behest of Eton College who were the freeholders. However, the

Appendix 7

Montagu Evans, Nos. 44-44A Gloucester Avenue Historical Analysis

November 2011

Nos. 44-44A GLOUCESTER AVENUE

HISTORICAL ANALYSIS

November 2011

Clarges House
6-12 Clarges Street
London W1J 8HB
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Fax: 020 7312 7548
www.montagu-evans.co.uk

CONTENTS

FIGURES

1.0 OVERVIEW: HEAD OFFICES

1.1 The site was first developed by the Electric Telegraph Company a modern industrial enterprise. Its headquarters were suitably impressive. The Central Station in Lothbury had a public hall which made an unambiguous architectural statement. (Figure 1) This building, constructed in 1847, was the work of Henry Arthur Hunt (1810-1889) who had made a notable start to his career by making the detailed estimates of the Houses of Parliament for Barry.

1.2 By 1848 its West End offices were even more prestigious, occupying a landmark John Nash building at 448 The Strand. (Figure 2)

2.0 BACKROOM SUPPORT

2.1 But high-end architecture was only employed where it was needed. In 1859 Hunt, by then consulting Surveyor to the Office of Works, completed new General Offices in Great Bell Alley, off Moorgate. This was a distinctly no-frills building. (Figures 3 and 4)

2.2 By this time the Company had constructed a new factory for the manufacture and storage of its equipment, and this building is the site at Gloucester Avenue (then Gloucester Road). Camden had been the northern terminus of the first experimental telegraph line, which started at Euston. Since 1847 the Company had installed telegraphic communication along the LNWR main line.

2.3 The purpose of this Report is to trace the architects/surveyors who created the factory, and to recover the functions of the various components of the complex.

3.0 THE GLOUCESTER ROAD FACTORY

3.1 Research for this report was complicated by the fact that many of the original Company's archives were allegedly destroyed by the Directors when the Post Office took the enterprise over in 1870. The surviving material passed with the Post Office archives to the Public Record Office, who handed most of the documentation over to the newly formed BT Archives. They then complicated matters by dividing this up between their archives in High Holborn and the Post Office archive at Mount Pleasant. Just to complicate matters further, each of these has a slightly different digitised catalogue.

3.2 Preservation of documentation on the fabrics of the pre-1870 companies does not seem to have been a priority, but fortunately all the architectural drawings to survive have been retained at Kew. Among these is a sheet containing the plans of the site and buildings at Gloucester Road (WORK 30/5080). Regrettably this is in a poor state of preservation.

3.3 The outline of the current site superimposed on the plan shows that the footprint of the whole site has remained broadly the same as it has been partly redeveloped. (Figure 5) The plans are signed by George McLellan, John Jones and William Bird. It would take considerable further work to find out anything about one or all of these individuals, and that resource is not necessary for the present purposes. However, the relevant volume of the *Survey of London* notes that an architect and surveyor by the name of McLellan was living in the Brompton area in the 1870's and there is no reason to doubt that he was the man.

3.4 The plan of the factory element of the site (which the proposals refurbish) shows exactly the same outline as that present today, with the metal processing taking place at a Smith's Shop at the south end, with a Battery Shop next to it, then a Store room, then a Jointing and Testing Shop for the cables, then a Insulator Shop, and finally a Packing Shed where the finished articles were prepared for despatch. (Figure 6)

3.5 The elevation shows that the Factory building range from the Battery Shop to the Insulator Shop remains quite recognisably the same as in 1858. (Figure 7) However, the Smith's Shop has lost its chimney and roofline (in the 1980's, according to the Greater London Industrial Archaeology Society) so that its former function is now unrecognisable, and indeed unrecognised in previous analyses of the site. The Packing Shed has been brought up to the same height as the Factory range. These buildings – the rear part of Building 2 and Building 4, using the established terminology – are earmarked for demolition and replacement under the proposed scheme.

3.6 A *revenant* from 1858 would clearly recognise the Factory range and be imaginatively able to reconstructed the Smith's Shop. The frontage to Gloucester Road would ring no bells at all. (Figure 8) A brick wall lined the road, pierced by two entrances. The roof of an office and stable block was visible next to one of the entrances, together

with the frontage of a two-storied house with basement presumably for the manager/chief engineer. (Figures 9 and 10) The house remains, perfectly recognisable. The stables and office were swept away in the major redevelopment of the site, which is considered next.

4.0 THE REDEVELOPMENT OF 1871

4.1 The 1858 Factory is mentioned in one of the few documents generated by the Company which appear to have survived. In the half-yearly Report of June 1858 it was noted 'It has become necessary to erect new offices in Bell Alley [see 2.1] and at Camden Town, both of which are now far advanced towards completion.' (BT Archives POST 81/19) The December report noted that the Gloucester Road buildings were completed and in use.

4.2 No further mention of any development at the site occurs from then until the Company was bought up by the Post Office in 1870. This takeover had been in the air for some time and it is probable that the Company had no intention of taking on a considerable expense in updating the site in order for another body to profit by it.

4.3 An undated and unsigned plan in the National Archives (WORK 30/5081) probably shows the first thoughts of the Post Office surveyors on the enlargement of the site. The range adjoining the railway remained virtually unaltered, but the Gloucester Road frontage was now an office and workshop block. The garden to the house is clearly seen. (Figure 11) Only the ground floors are shown.

4.4 Another undated (though both this and the previous plan are dated 1870 by the National Archives) and unsigned plan (WORK 30/5082) clearly represents a first rethink of the arrangements within the frontage block. The basement (Figure 12a) is given over to storage. The ground floor contains offices and a testing room on the right hand of the main entrance, with stables, storage and a loading bay for wagons on the left. The first floor held instrument stores, metal stores, a workshop and tool store. The second floor held the foreman's office, a lacquering shop, and mechanics' workshops. (Figure 12). There is today no evidence of these several functions.

4.5 Four drawings in excellent condition, from a set of at least five, are dated July 20 1871. (WORK 30/5083-6) These are autographed Robert Richardson at The Office of Works. Mark Manley and Thomas Rogers were the builders. It has been seen the old Company used an architect/surveyor from the office to design its General Offices – now that the site belonged to the Post Office the Office of Works would have been employed as a matter of course. Figure 13 shows details of the basement, partly roofed with jack arches. Figure 14 shows the floor plans of the frontage building as redesigned by Hunt. The basement now holds, in addition to storage, an engine house and coal store. The other floors' functions are essentially unaltered. The shallow plan of this range likely was the product of the earlier layout, and an expedient decision to retain the rear ranges which obviously limted the depth of any new frontage building.

4.6 Figure 15 shows that the façade to Gloucester Avenue is virtually unaltered. The rear elevation is similarly instantly recognisable. (Figure 16) The 1872 OS (Figure 17) shows Richardson's new layout realised. The structure proposed for removal is not shown; rather there is shallower range in its place. A further significant addition was

made at an unknown date, but shown in the 1891 OS reproduced in the Design and Access Statement. For the present purposed the 1913 OS is shown here. (Figure 18) This was a Store Room and Van Shed shown in a drawing dated 1877 by TNA. (WORK 30/5087. Figure 19) A building in the position is shown faintly indicated on Figure 11.

5.0 THE IMPACT OF THE PROPOSALS ON THE SITE

5.1 The proposals involve the demolition and replacement of Buildings 2 and 4. Building 4 probably lost its function around 1894, when the site was rechristened as a Store rather than a Works.

5.2 Building 2 consists of three main components, none of them part of the original builds of 1858 and 1871. The footprint of the original Packing Shed is preserved next to the railway line. The main body of the building is represented by the Store Rooms and Wagon Shed, not part of the 1871 build but probably not much later. Plans and photographs in the Design and Access Statement show that the building remains essentially the same behind an undated later (probably much later) accretion on the courtyard side.

6.0 THE CHRONOLLOGY SUMMARISED

6.1 1858 the original construction. Figures 6, 7 and 9 show this very clearly. Figure 20 shows the present site with the elements of the original footprint marked A, B, C and D. of these, B and D survive in a plainly recognisable state, D in particular being almost unaltered externally. A was rebuilt at an unknown date, possible in the 1890's when the purpose of the site changed fro manufacture to storage. C lost its original function at the same time and with the demolition of the chimney and roof line in the 1980's it is no longer recognisable.

6.2 1871 the second building campaign, now under Post Office control. This is shown in Figure 12 to 16, and marked on Figure 20 as E, F and G. This entire block survives in a plainly similar condition externally.

6.3 1877 effectively the final addition. Stores and wagon shed closing off the north end of the courtyard, shown in Figure 18 and marked H on Figure 20. Compared with the factory of 1858 and the multi-purpose block of 1871 this is of secondary importance.

6.4 The names of the architects/surveyors are not know. George McLellan, John Jones and William Bird were responsible for the original 1858 build, and the Office of Works architect Robert Richardson for the 1871 frontage building. The 1877 facility was almost certainly also an in-house Office of Works responsibility.

6.5 The areas planned for demolition are A, C and H. It is evident that compared with the key elements of the site B, D, E, F and G these have been altered in varying degrees. There is little clean evidence of the original use of A or H. The best evidence for the history of the site, given its changing character, are the archival sources available in public collections and summarised here. The site deserves to be recorded prior to redevelopment and this report taken together with drawings and photographs would be consistent to satisfy and planning conditions seeking this outcome.

Figure 1

Figure 2

Figure 3

Figure 4

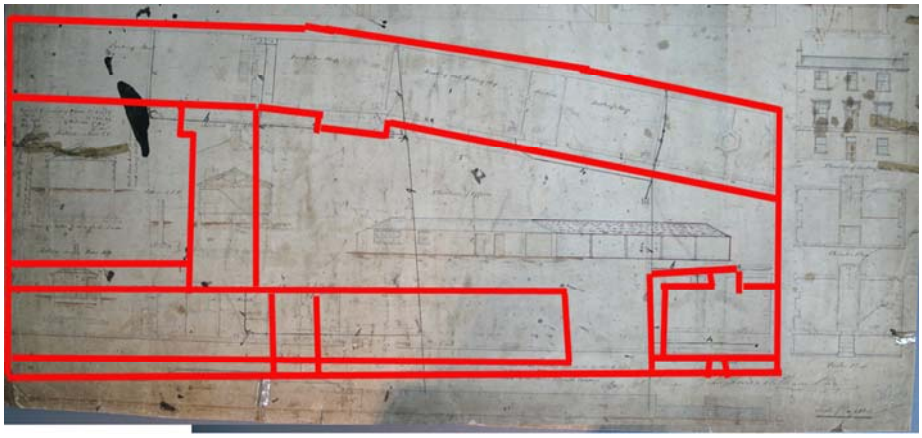


Figure 5

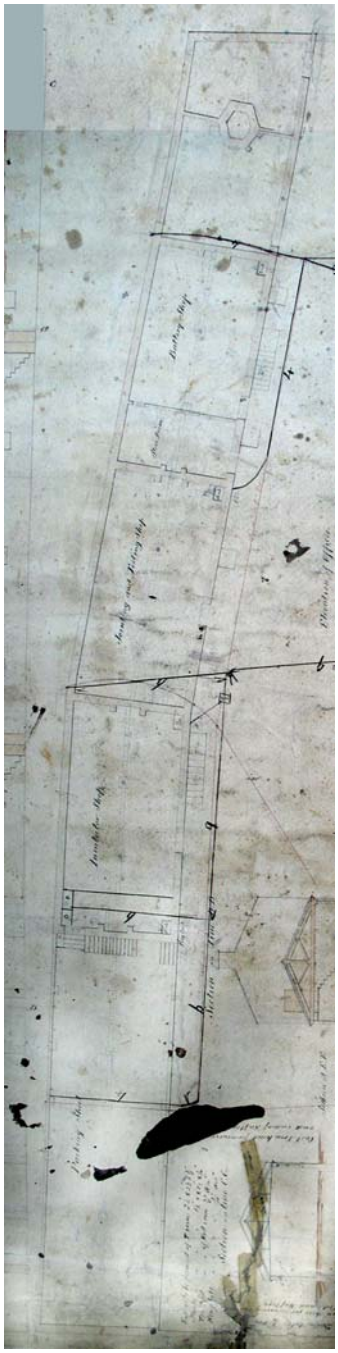


Figure 6

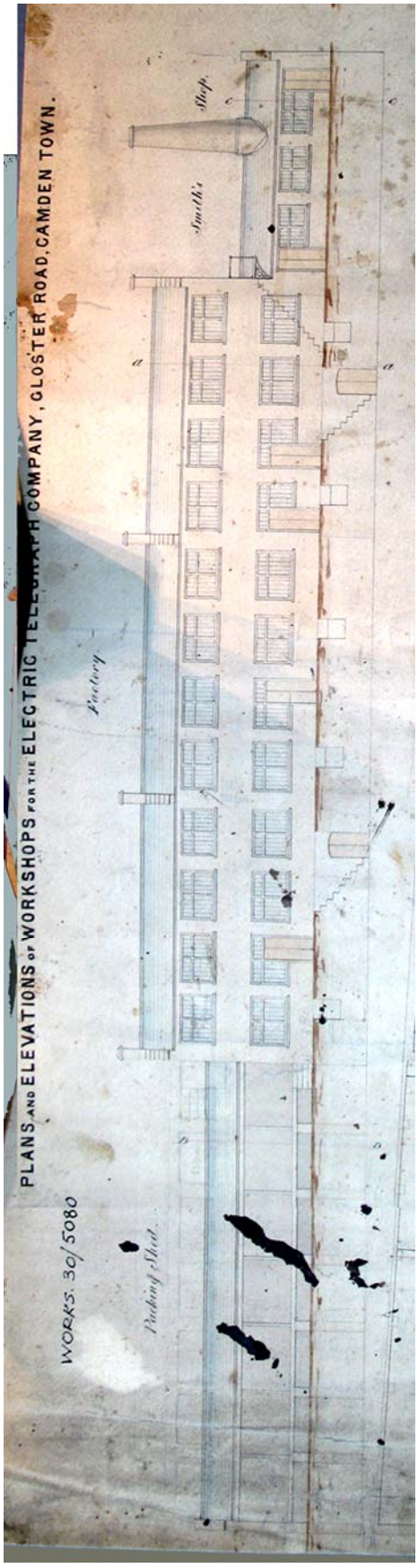

PLANS AND ELEVATIONS OF WORKSHOPS FOR THE ELECTRIC TELEGRAPH COMPANY, GLOSTER ROAD, CAMDEN TOWN.
WORKS. 30/5080
Packing Shed
Factory
Smith's
Shops

Figure 7

Figure 8

Figure 9

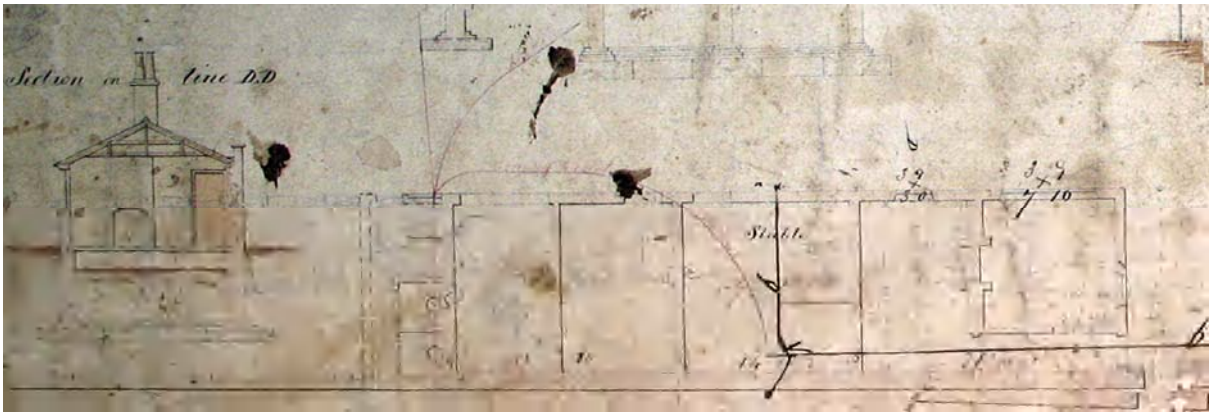


Figure 10

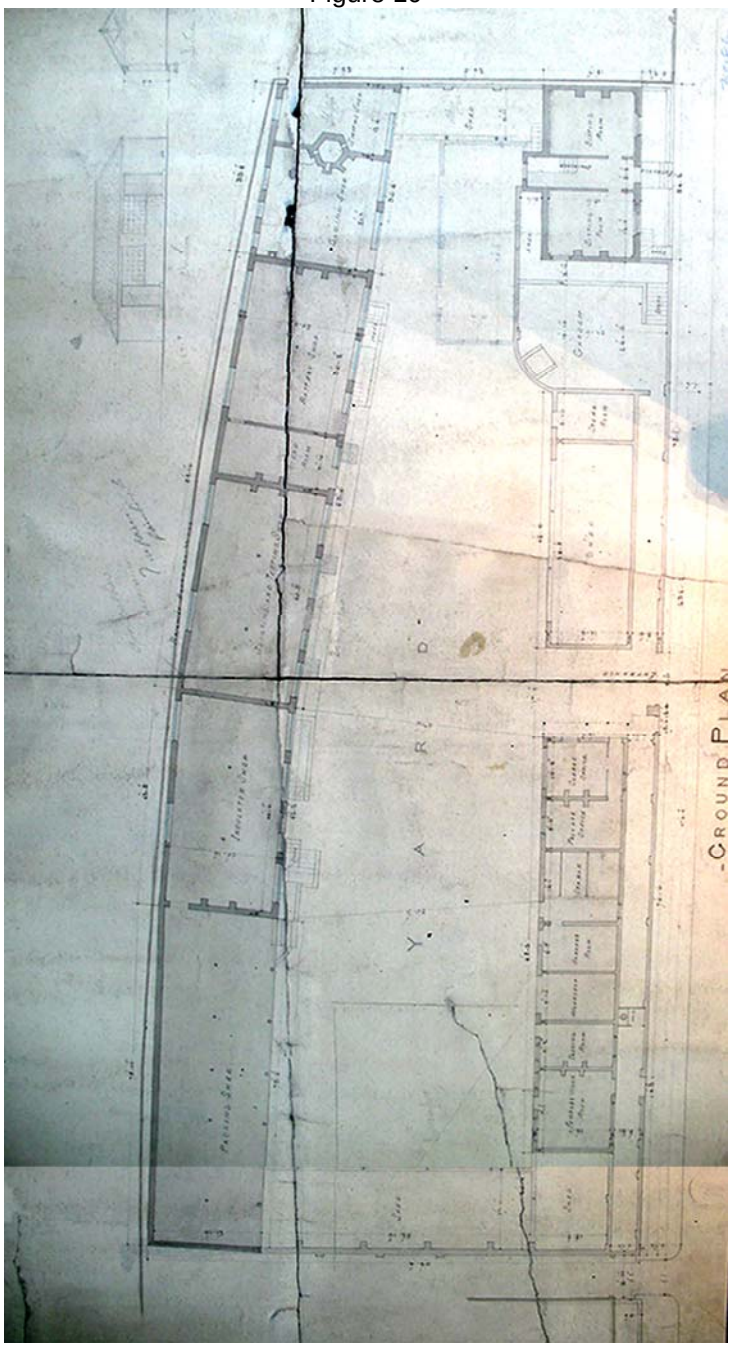


Figure 11

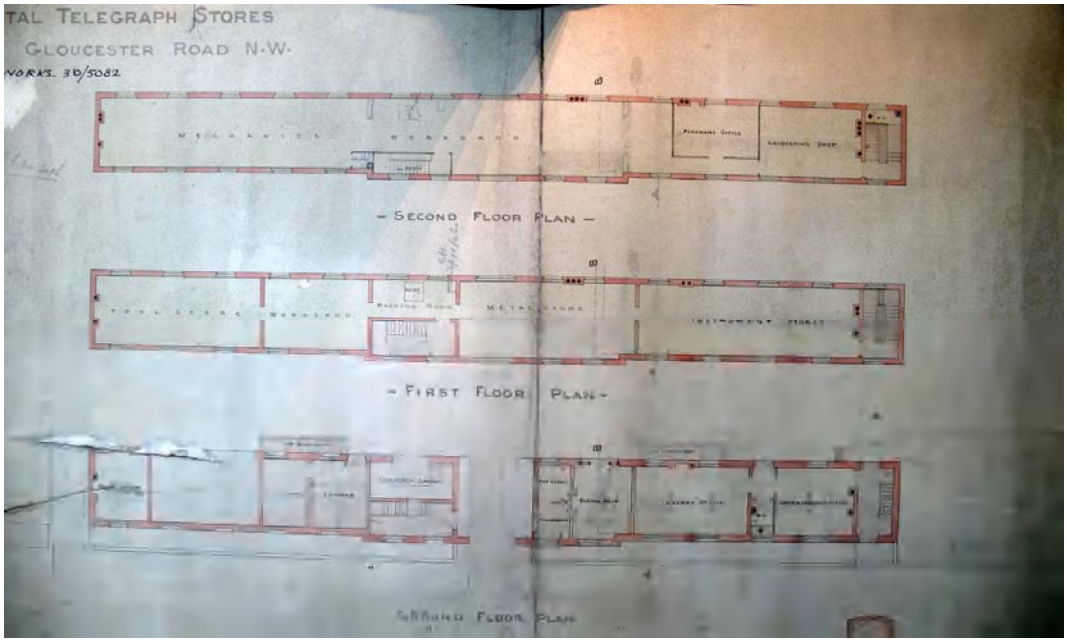


Figure 12

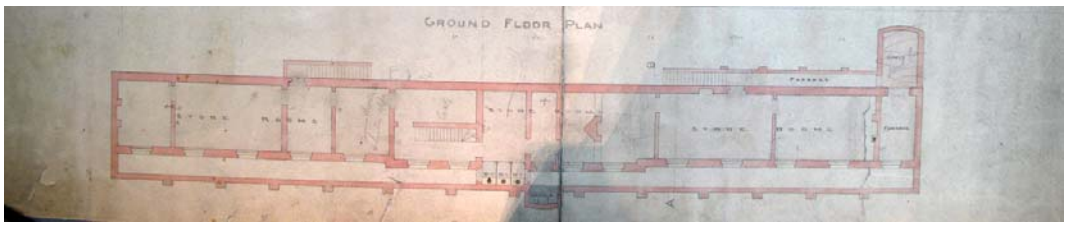


Figure 12a

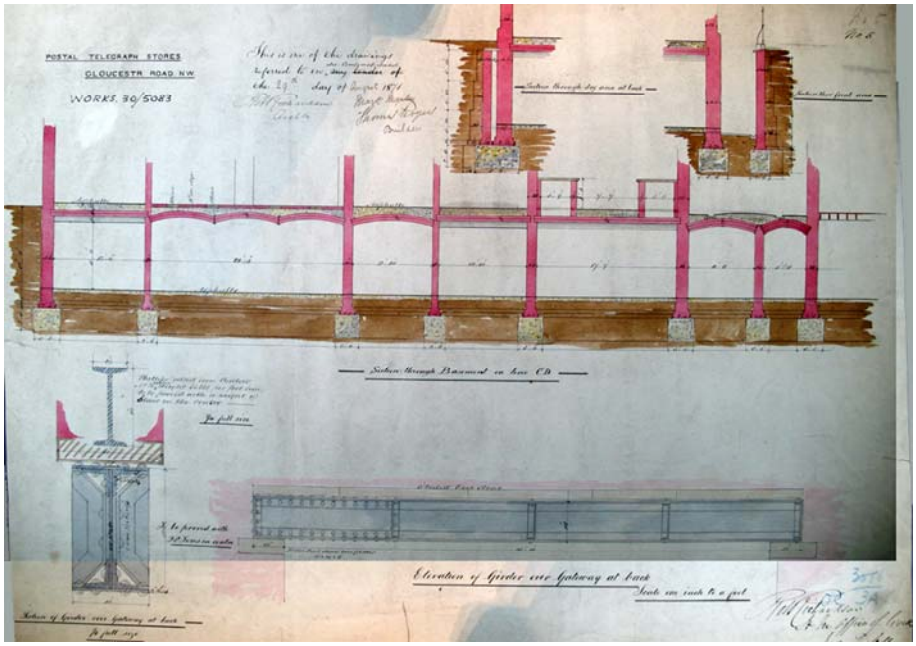


Figure 13

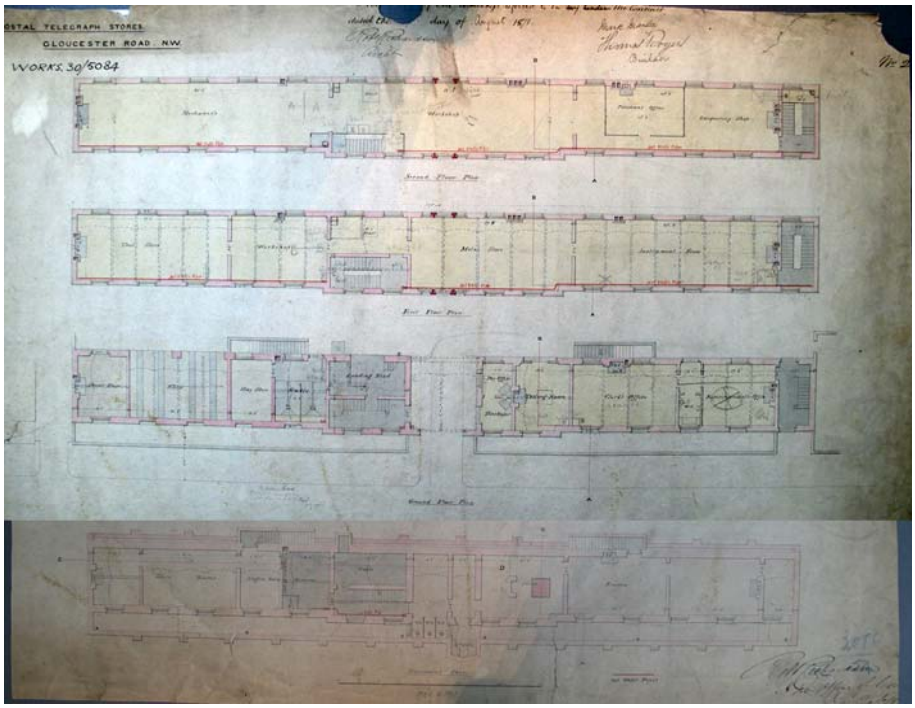


Figure 14

Figure 15

Figure 16

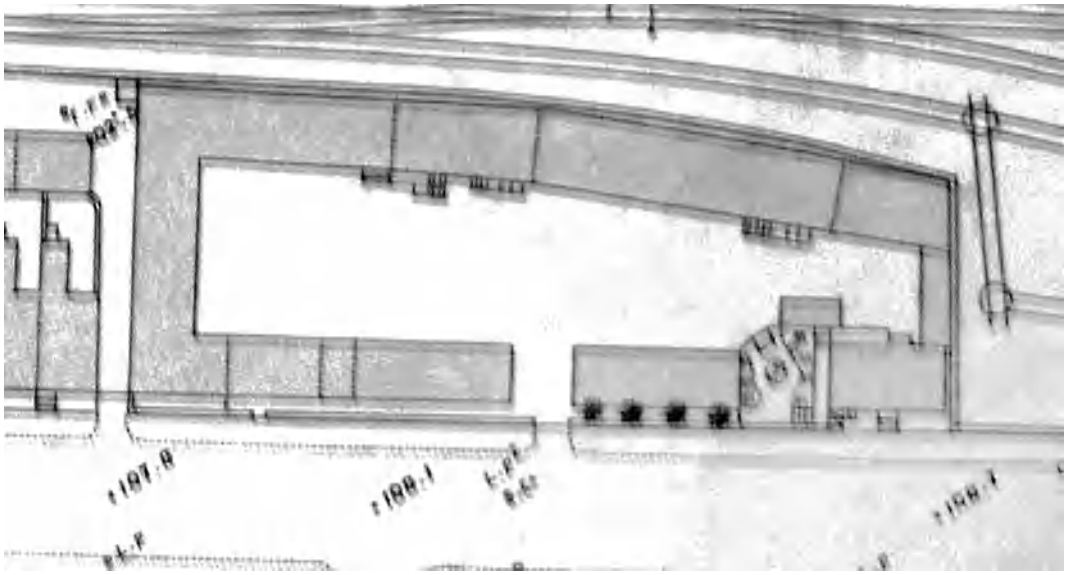


Figure 17

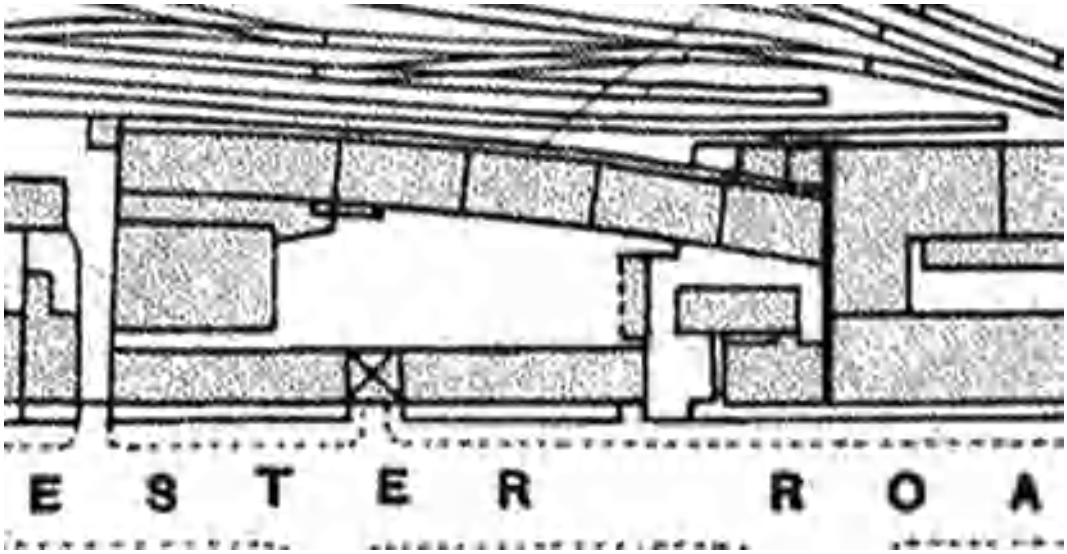


Figure 18

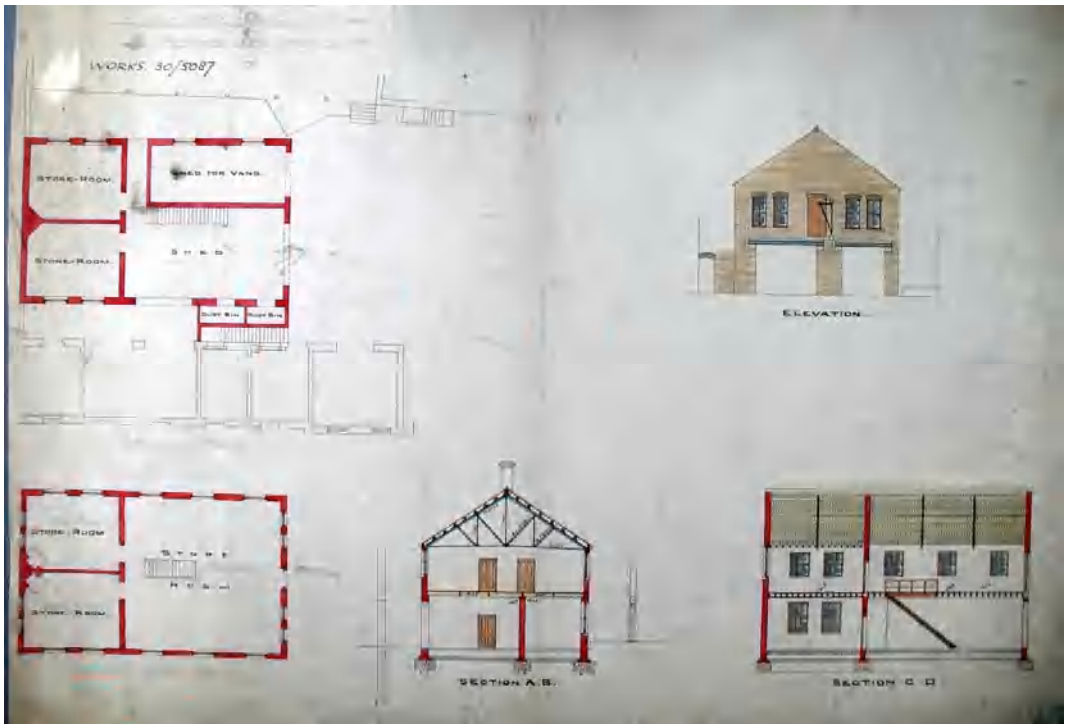


Figure 19

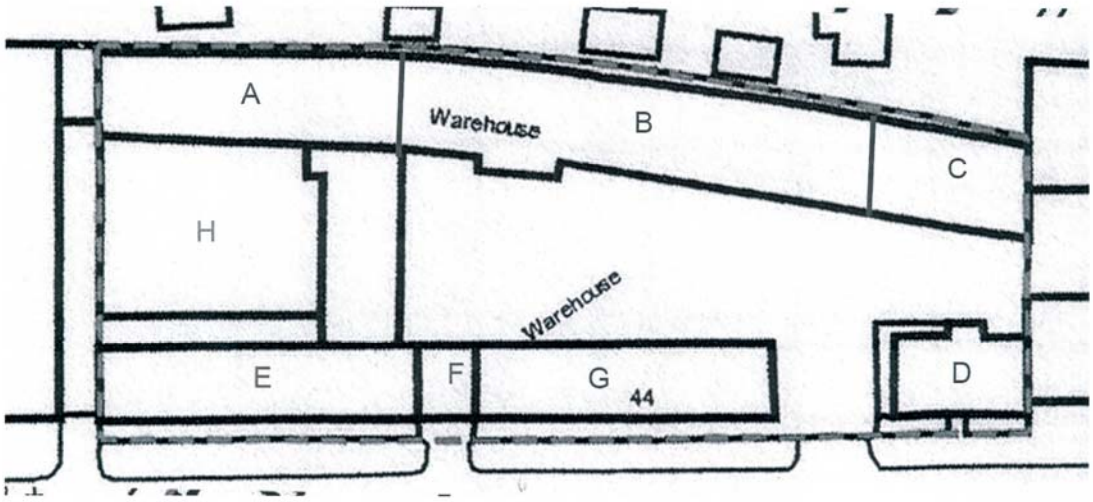


Figure 20

Appendix 8

Steven Roberts web-published history of the Electric Telegraph Company

Search the web

Distant Writing

A History of the Telegraph Companies in Britain between 1838 and 1868 ~~~~ By Steven Roberts

4. THE ELECTRIC TELEGRAPH COMPANY

The Electric Telegraph Company
Central Station, Founders' Court, Lothbury, London
The Public Hall, the Instrument Gallery above, and the Attic Gallery with offices, looking south to the entrance, as designed in 1848
There is another view of the Hall, looking east, below

The Lords of Lightning

"Lords of lightning we, by land or wave
The mystic agent serves us as our slave"

Henry Schütz-Wilson,
Assistant Secretary, Electric Telegraph Company

On September 3, 1845 a syndicate led by the Ricardo family of City merchants projected a joint-stock company to purchase all the patents Cooke and Wheatstone had obtained to date and to provide capital for their more effective working, particularly to gain an income from public messages through a national network of telegraph lines. This created *The Electric Telegraph Company* – the first joint-stock concern in the world intended to unite a country with a network of electric communications. It had a short life of just over twenty-five years. In that time it united electrically not just the entire country but also, with its corporate allies, reached the extremes of empire.

The first Board of Directors of the Electric Telegraph Company comprised John Lewis Ricardo, the chairman, Samson Ricardo, brother and business partner of J L Ricardo, William Fothergill Cooke, George Parker Bidder and Richard Till. These five were also the largest shareholders in the company, and were to stay in post for over ten years.

Cooke had agreed, prior to the establishment of the Company, to finance the expansion of the telegraph by assigning the majority of his patent rights to J L Ricardo and G P Bidder. This assignment valued Ricardo's share at £60,000 and Bidder's at £55,000, in addition to Cooke's minority at £45,000. The three partners transferred all their rights in the patents to the Company by an indenture or contract dated August 5, 1846.

The Value of Cooke & Wheatstone's Business
According to W F Cooke in 1855

The business acquired by the Electric Telegraph Company consisted of twelve domestic and foreign patents, Cooke's telegraph contracting business, the existing contracts and the materials on hand for future works.

Paid by the Company.....150,000
Less unrealised contract.....8,600
Total.....£141,400

To Wheatstone.....30,000
To Lancaster for Irish rights.....5,217
To Materials and for other rights.....10,117
To Cooke
In Cash immediately.....2,566
In Cash by future profits.....48,000
In 1,820 shares each of
£100, at £25 paid.....45,500
Total.....£141,400

As can be seen Cooke received £50,000 and Wheatstone £30,000 in cash. Cooke's additional 1,820 shares could not be sold for several years and he was obligated to the Company to pay the balance of calls, £75 per share.

Wheatstone was paid £20,000 in commutation of his royalty rights and £10,000 for his share in the Scottish, Irish and Belgian patents.

Regarding the directors; the firm of J & S Ricardo & Company of 11 Angel Court, Bank, were originally merchants in the Spanish trade, but in the 1840s and 1850s had become deeply engaged in financial and political affairs; investing in foreign stocks and railways. Richard Till, a lawyer, of Guildhall Buildings, City, had been Secretary of the London & Birmingham Railway and was to have a similar role in many of the railway concerns that G P Bidder had influence in.

Whilst W F Cooke had become a skilled user of the public press, the Company released very little information over and above its very modest legal requirements. After 1849 it resisted all enquiries by outsiders as to its business; such information as became available was through Government returns (which it completed only sporadically), from its competitors and from its associates. The Company proved to be a remarkably secretive concern. So much so that when the government took over in 1868 the board of directors, apparently, ordered the destruction of all of its historic documents, records and files. This accounts in someway for this work.

The new Company adopted as its motto the curious Latin sentiment *Ne tentes, aut perfice* – which very loosely translates as "succeed or do not try". Indeed it tried, tried hard for twenty years; it succeeded and was well rewarded for that success.

Just at the moment of the Company's creation in September 1845 S F B Morse arrived in London from America, exactly as he had done in June 1838 on hearing of the success of Cooke & Wheatstone's first telegraph line. He was, näively, allowed to inspect the Paddington line and the long line to Portsmouth. Typically, he then

approached one of the Electric's speculative competitors offering to sell them his apparatus. Also in that September Morse contrived to examine the line worked with Wheatstone's dial telegraph between Haarlem and Amsterdam in the Netherlands before going on to Paris to view the government circuits there. As in 1838 Morse recorded in his notes all the advances he had found in Europe regarding the far superior electro-magnets, the new overhead iron wires and the new ceramic insulators. Speeding back to New York by steamer, Morse cynically incorporated them all with Alfred Vail's ingenious if clumsy apparatus into a patent for what was to become the well-known *American telegraph* in April 1846 in his own name.

The Electric Telegraph Company was registered under the new Joint Stock Companies Registration and Regulation Act of 1844 on September 2, 1845. This may be said to be the date of its foundation. To enable it to negotiate with public authorities and to obtain wayleaves over private property it required powers from Parliament through Statutory Incorporation, by legislation, as with the railways.

The Electric Telegraph Company Bill was to pass through Parliamentary scrutiny with remarkably little difficulty. Despite the novelty of its objectives hardly anything was reported in the press on its progress. Its petition for the Bill was submitted on February 16, 1846 to Parliamentary Sub-Committee No 5 (many sub-committees were needed in that year to process the mass of railway legislation), and passed standing-orders. It had a second reading before the full House of Commons on March 2, 1846. Given the unusual nature of its proposed business a report was required, this was received on May 8, and the third and final reading of the Bill was heard in the Commons on May 13, 1846, and passed. It was signed by the Queen as the Electric Telegraph Company Act, 1846, on June 19, 1846.

Despite what has been said subsequently there was little opposition to the Bill in Parliament, none of which received publicity in the press at the time. This was unlike many of the railway bills that were fiercely contested throughout their passage, many of which also failed to meet Parliament's standing orders on organisation and legal form.

In accordance with its new Act, the first General Meeting of the proprietors of the Electric Telegraph Company was held at 345 Strand, London, at 4 o'clock on Tuesday, July 7, 1846.

The Electric Telegraph Company Act of 1846 authorised the considerable joint-stock capital of £600,000 in £100 shares (on which only one-quarter, £25 per share, was to be paid-up immediately) to buy out the patent rights of both Cooke and Wheatstone, to finance their exploitation and the construction of telegraph lines across the country, with, among other legal powers, the right to lay wire over public property, especially railways.

According to Robert Grimston, the Company's last chairman, at this time and for many years after there were just eight shareholders!

The Electric Telegraph Company's Act of Parliament had several clauses that set a precedent for working electric communication; its circuits had to be open for the sending and receiving messages by all persons alike, without favour or precedence, subject to a prior right of use for the service of the Government, and subject to such charges and regulations as the Company might make. However, when challenged in the Courts for giving preference to messages for 'The Times' newspaper over those for the 'Morning Herald' in 1850 the Company rejoined successfully that the 'Times' paid more for securing the preference.

It had powers to purchase patents, not just those of Cooke and Wheatstone, which would otherwise have been illegal under the ancient Acts for preventing monopolies in trade. Unusually the Act allowed the Company to apply to the Government to have the duration of its patents extended over the usual fourteen years. The Courts later rejected the Company's application to extend these monopoly rights.

The Act also indemnified the Company against the negligence and carelessness of its officers and employees in the transmission and receipt of public messages. This indemnity against the results of errors in messaging was periodically challenged in the Courts; to no avail. The Electric company and its competitors were careful in ensuring that all messages were sent on forms that spelt out their legal protection, and that they all offered insurance against loss – at extra cost.

Powers were given to protect the works from vandalism: "that if any person shall wilfully remove, destroy or damage any electric telegraph, or any wire, standard or apparatus, or other part of such telegraph shall be guilty of a misdemeanour." The exercise of powers of detention extended not just to the police but to company officials and employees, to railway company employees and to any passer-by called upon to assist these individuals. The legal interpretation of 'misdemeanour' led in January 1854 to three men being jailed for six months with hard-labour for cutting the wires at Wigan in Lancashire.

The Government insisted that the Company be obliged to grant a license to anyone named by the Privy Council to construct and use a telegraph for official service. In addition every telegraph line had to be open "at all reasonable times" for the transmission of intelligence for the Government, and all such messages had to have priority over all others, even to the extent of stopping other traffic. In emergency any one of the Secretaries of State, the most senior Government ministers, could take possession of the Company's entire telegraph system for one week, and on a week-by-week basis subsequently, paying the Company the average weekly earnings for such seizure. When the Home Secretary implemented the latter requirement in 1848 during the Chartist emergency the charges were such as to give the Government second-thoughts about using the powers again.

From its commencement it intended to be a national enterprise, connecting the major cities and towns of the country by electric telegraph. After absorbing the original line to Southampton, the first long circuit it constructed was north alongside of the London & North-Western Railway, which came to an agreement with the Company in the autumn of 1846, from London to the major manufacturing town of Birmingham, which it completed in mid-1847. This line was continued north to reach the industrial city of Manchester on November 14, 1847.

As with the partnership the Company's initial income was to be derived from granting licences for use of the patents and from erecting lines; however in addition it anticipated substantial revenues from working public telegraphs, sending and receiving messages nationwide. That was an anticipation only slowly fulfilled.

The "Railway of Thought"

The financial journalist, John Herapath observed on July 1, 1846 that "the electric telegraph... has been not inappropriately termed 'the railway of thought'." He was right on several levels, not least in the initial connection between the spectacular growth of the iron way in Britain in the 1840s and the electro-magnetic nervous system that gradually paralleled it, allowing the transmission of ideas as much as of people and merchandise.

The Electric Telegraph Company took over the short, 19 mile isolated circuit between Paddington and Slough on the Great Western Railway - displacing Thomas Home, Cooke & Wheatstone's enthusiastic young agent. The line was not to be extended to Bristol for several years, but the Company retained the stations at Paddington in London and at Slough as an "exhibition" where the instruments were explained to visitors between 9 o'clock and 5 o'clock daily; including games of chess and draughts played by telegraph between the two points. Whilst the line was isolated from its network Charles Wheatstone, Frederick Bakewell and others were allowed by the Company to use its closed circuits for electrical experiments and to demonstrate new instruments. Theodore de Chesnel was appointed licensee and manager in Thomas Home's place. The "exhibition" was still open in 1849. De Chesnel became the Company's District Superintendent for the north-east of England by 1852 and for Scotland in 1856.

Another breakthrough had been announced on January 19, 1846 at the general meeting of the proprietors of the Midland Railway Company in Derby. The chairman, George Hudson, said that, after a "useful" trial on their long tunnel at Claycross, the whole 250 miles of the company's network would be provided with the telegraph. This was the Electric company's first large contract for works.

Hudson was to be influential in having the telegraph installed on most of the railways with which he was involved: the Eastern Counties, the York & North Midland, the York & Newcastle, as well as the Midland. It became clear in the scandals that broke about Hudson in the late 1840s that he had benefited personally from the relationship with the telegraph company, to the considerable disadvantage of railway shareholders.

The latter half of year 1846 was, however, a busy one, additional telegraph lines were rapidly being created: the long circuit alongside of the rails between Rugby and Leeds, 122 miles, was opened on July 1 by wayleave of the Midland Counties and North Midland Railways, as was that between Gateshead and Darlington on July 17, on the Newcastle & Darlington Junction Railway. On August 20 the Hull & Selby Railway agreed to lay the telegraph between its two terminal towns and on its branch to Bridlington.

The annual reports in July and August of the York & North Midland Railway noted that they had spent £10,000 to install the telegraph; that of the Midland Railway, £18,161 9s, and the Norwich & Brandon, £2,000 for similar purposes. Against these substantial sums, the London & Blackwall Railway had spent just £13 16s on repairs to its venerable system of four years longevity.

Whilst the midlands and the north-east of England quickly embraced the electric telegraph it was to be over a year before their systems were connected with the capital. Until then the circuits from the north stopped at Rugby, 76 miles from London.

On September 1, 1846 the South Eastern Railway opened every telegraph station on its lines from London to Dover, Folkestone, Ramsgate and Margate to public messages for the first time. It had spent by January 31, 1846 £17,820 on creating its own system, with a further £4,567 in the subsequent six months, independent of the Electric Telegraph Company.

On October 24, 1846, it was announced that a Central station would be opened at the "Company's depot" in the Strand, connected by underground cables to the railway termini in London. The first such connection was to be to the long line on the London & South Western Railway. In anticipation of this, a week later the Eastern Counties Railway revealed that it was to connect its telegraph circuit at the Shoreditch terminus in the City of London to both the Royal Exchange and Lloyd's insurance market, so allowing electric connection with Liverpool by a roundabout link. In a belated reaction to this the London & North-Western Railway announced on December 5 that it had agreed to connect London with Liverpool and Manchester by telegraph, and also Liverpool with Manchester. It, too, promised an additional underground wire from Euston Square to the Royal Exchange in the City. The electric line was then complete from Euston Square to Watford. It was to cost the railway £140 per mile to erect.

There was a degree of wishful thinking by the railways over their proposed City extensions; it was left to the Company to "network" the capital.

Public messages received at the new Electric Telegraph Office in the Strand in London were carried to the circuit instruments at the railway terminals by porter until the autumn of 1847 when wires were led from them to the central hub. It was only then that all of the lines, new and old, could connect electrically.

The first six months also saw several incidents that opened the eyes of the public to the value of the electric telegraph. These included a visit of His Highness Ibrahim Pasha, the legendary regent to his elderly father, the Viceroy of Egypt, to the London & South-Western Railway's telegraph office at Nine Elms on June 16, 1846, whilst on a state tour of Britain. His Highness stayed an hour and sent questions by telegraph to Gosport and Portsmouth which were instantly answered. A solicitor in Southampton was enabled to send testimony by telegraph to his client's advocate, Mr Serjeant Smith, before one of the Commissioners of Bankruptcy in London in May 16, 1846. Mr Smith noted that he had posed questions and had been answered in seventeen minutes. The suspension of payments by the Leeds Commercial Bank was reported in Birmingham by telegraph, just fifteen minutes after it closed its doors at twelve noon on August 10, 1846, saving banks there embarrassment and money.

On August 21, 1846 the horse racing results from the York meeting were reported by electric telegraph for the first time in 'The Times' newspaper. The message had to be carried to London from Rugby by train as there was no telegraph yet south of that

station on the London & North Western Railway. The race meeting at Doncaster was similarly reported on September 18.

A correspondent in the 'Railway Journal' of August 22, 1846, wrote, "I cannot help here noticing a very useful contrivance on the [Birmingham &] Derby Junction Railway by the engineer, Mr W H Barlow, of testing the velocity of trains. He has placed the electro-telegraph poles at the distance of 352 feet apart, by which one may get the velocity in miles per hour by doubling the number of posts passed by in a minute". Barlow was assisted in this and his other experiments by the Company's local superintendent, R S Culley.

On a criminal level, the electric telegraph apparatus at New Cross railway station in the Old Kent Road was stolen on August 18, 1846. The newspapers indicated, on the other side of the coin, that the police had immediately adopted the telegraph to intercept fleeing miscreants, as well as more mundane evaders of fares on the railways. Vigilant parents were also reported in that year as ordering the interception of eloping couples by similar means before any further sinful transgressions occurred.

Coinciding with all this publicity Mr J M Maddox, sole lessee and manager of the Princess's Theatre, 73 Oxford Street, London, advertised his new production of "Love's Telegraph", starring the famous players, Madame Vestris and Charles Mathews, in July.

The Electric Telegraph Office 1846
No 345 Strand

Premises
On its foundation in 1846 the Electric Telegraph Company had no operational model to follow. Its initial inclination was to have a large office central to the whole of London. In accord with this, by the summer of that year it had, in W F Cooke's name, leased a substantial house at 345 Strand – just vacated by the Candidate Life Assurance Company, which had previously been the home of the 'Courier' evening newspaper and of Hodsoll & Stirling's bank. This was the first *Electric Telegraph Office*. It was three windows broad, of four floors, and was located on the north side of the street, midway between Wellington Street and Catherine Street, almost opposite the new Waterloo Bridge. Cooke planned to connect 345 Strand to the lines emanating out from the railway termini, hence to the rest of the country. For the next three years this was to be W F Cooke's London residence, his principal or country home being at Elliott Hill, Blackheath.

For the first general meeting of the proprietors held at 345 Strand and initially advertised on June 20, 1846, John Kymer, Jnr, was appointed the company secretary pro.tem. Kymer, then age 35, having been styled in 1841 merely as a "clerk", whose father had failed successively as a broker, sugar refiner and coal-owner, the latter in 1845, did not last long in the position, or in business. He was back living with his retired parent in 1851 in Hampshire.

At the same time in the summer of 1846 the Company took a lease of a cooper's (barrel-makers') yard at 22 Church Row, Limehouse, adjacent to the London & Blackwall Railway and the Thames river. This was to be its *Electric Telegraph Depot* for heavy stores, wire, poles and ironwork. It was initially under the superintendence of Philip Woodrow, but by the end of the year he had been replaced by Isaac Hitchett. The Depot was narrowly saved from destruction by fire on October 29, 1846 when the adjacent, very large cooperage of James Wilson Gordon & Company in Church Row was burnt down; the staff of the Blackwall Railway having quickly summoned the insurance companies' fire engines - one would like to believe, by telegraph...

As well as W F Cooke's rooms, 345 Strand accommodated the company secretary's office, the engineer's office, the directors' meeting or board room and a "shop" with a large plate-glass window for the telegraph office, with public and private doorways. There was also a model room to demonstrate the many instruments that then existed for telegraphy; including an acoustic or bell telegraph devised by Wheatstone, inventions by its own engineers and by other patentees, as well as instruments that printed both code and letters of the alphabet. Until 1847 there was little real public business as W F Cooke was concentrating on the negotiation of wayleaves and the construction of lines along the railways.

In July 1847, the Strand office was open to the public, admission being by ticket. Here there were displayed Cooke & Wheatstone's two-needle telegraph with drop handles and drawings of Bain's new chemical telegraph using punched tape, intended for "long messages and public news." Also on show was Bain's electric clock, an electric passenger counter for omnibuses and an electric door monitor to register traffic, among other instruments. Schemes afoot included a "fire telegraph" to connect the fire engine stations of London. On sale at 6d was the first edition of 'The Handbook to the Electric Telegraph', with fifteen engravings, which was to go through several reprints into the 1850s. Of greater importance was the promise of a new Central Telegraph Station, then under construction in the City of London, to be connected to all of the railway telegraph lines.

The Company's press coverage in 1847 anticipated individuals engaging in "conversations" on its premises, rather than, as it was to transpire, having all messages delivered to recipients. A "turn-round" time of three or four minutes was then thought possible for a "conversation" being held between people in its London and Manchester offices.

It also made clear that it was going to transmit public and commercial news from London to subscription rooms in the provinces, optimistically within five minutes of the news arriving in the capital!

On July 28, 1847 fifty-nine places were in telegraphic connection with London or "will be opened by the commencement of the year": Ramsgate, Margate, Deal, Dover, Folkestone, Canterbury, Maidstone, Tunbridge, Gosport, Southampton, Winchester, Dorchester, Bristol, Gloucester, Cheltenham, Peterborough, Yarmouth, Huntingdon, Hertford, Northampton, Coventry, Birmingham, Wolverhampton, Stafford, Chester, Liverpool, Manchester, Leicester, Derby, Nottingham, Lincoln, Chesterfield, Hull, Sheffield, Bradford, Wisbeach, Lowestoft, Cambridge, Chelmsford, Ipswich, Rotherham, Barnsley, Wakefield, Leeds, Halifax, Rochdale, York, Darlington, Newcastle, Berwick, Edinburgh, Glasgow, Scarborough, Bridlington, Stamford, Norwich, St Ives, Ware and Colchester. The station order is that given by the Company, apparently following railway lines. Gaps then existing in circuits as they were being built were covered by relaying messages by train to the next available telegraph.

The Electric Telegraph Company's Subscription Room 1847
No 142 Strand

By the end of 1847 the Company opened a fine *Subscription News-room* opposite of its West End office, upstairs at 142 Strand, "a spacious and unusually superior first-floor, in the most central part of the Strand, consisting of four rooms (one of which was 24 feet by 20 feet), lighted with gas and having a fine entrance Hall". The premises had been built in 1838 as the 'New Turk's Head Coffee House & Hotel'. The building had a broad shop front at ground level, occupied by John Chapman, an impecunious publisher, with two wide doors at either side, and of five storeys. It was a full storey higher than the rest of the houses. In 1848 a separate Clock Department was also based at 142 Strand. It exhibited there electric 'master' clocks to Bain's

patent, for sale to the public at £16 16s, with extra 'companion' dials, connected electrically, at £10 10s each.

The Strand, the main thoroughfare in the retail and residential West End, between the City the heart of the financial and commercial district and Westminster, the centre of government, was called by Benjamin Disraeli at the time 'the first street in Europe'.

The Company also intended to manufacture instruments to Cooke & Wheatstone's patents, as well as Bain's electric clocks. The *Instrument Department* was located in two temporary workshops at 25½ Bouverie Street, Fleet Street, London, under the management of Nathaniel John Holmes, and functioned from 1846 until October 1849. To produce the clocks it used for a period Bain's original Electric Clock Manufactory in Edinburgh, Scotland.

On May 29, 1847, the Electric opened a public exhibition at the Royal Polytechnic Institution, 309 Regent Street, London, featuring its electric clocks, needle telegraph, printing and writing apparatus and alarms. The display ran for six months, entry was 1s 0d.

With the sole exception of the recently completed circuits of the South Eastern company (London to Dover, the seaport for France), an exception that was to have considerable consequences, the railway companies agreed to transfer their rights and leases with Cooke & Wheatstone to the new concern. Although the Company immediately advertised the lease of rights to third parties none were granted for public telegraphy.

The year turned out not a good one to launch a new concern. It was promoted in the middle of the great twelve-month Railway Mania in Britain that took hundreds of millions out of the economy for a massive burst of speculative investment, most of it found on credit. Like the house of cards falling, this was to be followed by a money panic in the City of London as common commercial credit dried-up; then by a food panic as the corn import trade was affected by the failure of credit and by the Europe-wide destruction of the potato crop through disease. All this was compounded by revolutionary unrest in France, Belgium and the German states in 1848, damaging continental trade. To cap it all the United States mounted an unprovoked invasion of Mexico disrupting Atlantic commerce with both countries. The five years between 1845 and 1850 were to be some of the most difficult for trade and business in the century, and it was to be so for the new Electric Telegraph Company.

In addition to these financial and international problems the Company faced challenges to its telegraph patent monopoly at the end of 1846. The first was an instrument devised by John Nott in Ireland and seized upon by Douglas Pitt Gamble, a preserver of food in cans for the navy, as a promotional vehicle. The second was that of George Little, who was backed by Alfred Brett, a wine and spirit merchant. Both were pursued through the courts by the Company, neither succeeded in displacing the Cooke & Wheatstone master patent or in acquiring capital.

The Telegraph and the Railways in 1846
Miles of Telegraph Line in Operation
Compiled by Henry Tuck for
The Railway Shareholder's Manual 1847

Company	Miles
South Eastern Railway	124
Great Western Railway	18
London & South Western Railway	94
Midland Railway	251
Eastern Counties Railway	169
York & North Midland Railway	106
Norfolk Railway	58
York & Newcastle Railway	103
London & Croydon Railway	10*
London & North Western Railway (Wolverton to Peterborough)	54*
London & Blackwall Railway	4*

Sheffield & Manchester Railway.....3*
Preston & Wyre Railway.....20*
South Devon Railway.....15*
Eastern Union Railway.....16*
North British Railway.....2*

TOTAL.....1,048

* The telegraph used for railway signalling only

The year 1846 was the first year of operation of the Electric Telegraph Company: only eight of the sixteen railway companies contracted offered public telegraphy and these in isolated local networks. There were as yet no circuits from London to the cities in the north or west of Britain, only to the south and east.

But there was a slow recovery. The strength of the British economy was such that it survived the Railway Mania, the money and the food panics with relative ease; although the reliance in Ireland on the potato crop was devastating to its population and that island's economy. The emergence of Louis Napoleon in 1848 and the subsequent creation of the Second Empire in France in 1852 stabilised the rest of Europe and restored economic harmony. The American war on Mexico was as short as it was brutal and its immediate effects on trade were equally brief. This stabilisation was assisted by the economic impact of immense new gold imports into Europe from California and Australia.

The Channel Cable of 1847
It was announced on June 11, 1846 that the pioneer long line built for the Admiralty from London to Portsmouth was to be extended from the Royal Clarence Dockyard across the harbour to the Port Admiral's House on Watering Island, underwater! The engineer Charles Samuel West had a mile of submarine cable made in London; it had a single copper core insulated with india-rubber and protected by an outer covering of iron wire. On July 22 one half of this unique cable was experimentally submerged between HMS *Pique* and HMS *Blake* using their small boats, under the supervision of William John Hay, the Royal Navy's "chymist" or senior scientific officer. Using a portable galvanic detector of Hay's devising and five small Smee silver-zinc cells a perfect circuit was obtained. The boats then laid the whole cable between the dockyard and the Admiral's house in a quarter of an hour on November 28, 1846. It was still in successful operation during the 1860s.

Based on this success Charles West and his partner, Captain W J Taylor, obtained on January 9, 1847 permission from the Admiralty to lay telegraph cables from England to France and from Holyhead to Dublin. They followed this, with the support of the famous novelist Charles Dickens and the engineer Joseph Paxton, by obtaining authority from Paris to land a cable in France on April 9 in that year.

Even before they were in possession of all of these permissions West and Taylor approached the Electric Telegraph Company in December 1846 with an offer to construct and to lease them a four-core cable insulated with india-rubber, an intermediate cover of cotton cloth impregnated with shellac, protected with plaited iron wire, to extend from Dover in England to Calais in France. The offer was based on an annual lease of 15% on the value of the cable, £6,000, for twenty-one years. The Company would work the cable to the Calais shore, where the French *télégraphe aérien* would take the messages onward. West and the Company eventually came to agreement on October 7, 1847.

The Electric in agreeing these terms had to negotiate a wayleave of the South Eastern Railway who, of all the existing Cooke & Wheatstone licensees, had refused to surrender their line side circuits to the Company. The negotiations with the railway were prolonged; it looked at an alternative underground circuit and then at an overhead circuit along the London, Brighton & South Coast Railway to Folkestone. The telegraph company had over-extended its capital and prevaricated; another concern stepped in and acquired a monopoly concession of the French government. The opportunity to use tried and tested technology to create the first long underwater telegraph cable was lost.

Charles West, ever nerveless, approached the Imperial government in Paris on December 5, 1858 with a request to renew his permission to land telegraph cables in France. He was politely rejected.

Survival
The Electric Telegraph Company's first five years were ones of negotiation and construction; making deals for access rights or wayleaves, building overhead lines, training and employing clerks, and opening stations, as well as promoting the new medium to the public. A great deal of money was expended in a short time; but revenues grew slowly.

Only in 1849 when the skeleton of the national network was completed could the telegraph be said to be secure as a business.

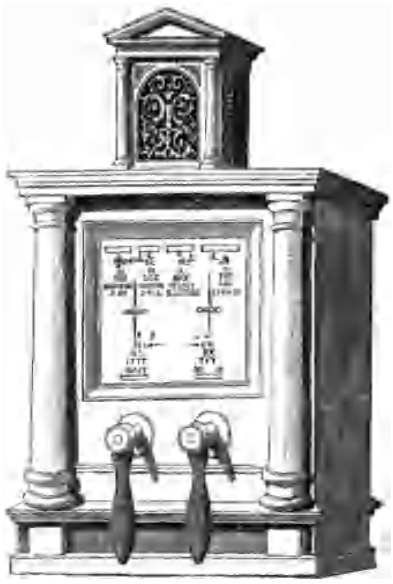
By 1850 there was a new energy and a new confidence about that Britain in particular benefited from. It was from this year that the electric telegraph grew in manifold degrees.

W F Cooke was elected to the first board of directors of the Electric Telegraph Company and remained with it until the end. In the earliest years of the Company he was effectively the managing director and implemented its initial burst of negotiations and line-laying. But once it was perceived that the costs of this expansion were getting out-of-hand the board attempted to rein-in Cooke's enthusiasm; he resigned in a fit of pique in November 1849. However he had returned to the direction, but in a less involved role, by 1850.

The partnership between Cook and Wheatstone had always been fraught and so it is no surprise to record that Wheatstone continued his life at King's College, London, and played no part in its management. Although he was frequently consulted by the Company in its early years Wheatstone had no contractual arrangement. He was in litigation with Alexander Bain over the patent for the electric clock, with whom the Company had already come to an arrangement and made a director; Wheatstone felt that his own employment in such circumstances would be prejudicial.

Much more was to be heard of the professor and his electrical innovations in the next twenty years. It was through his continued input, inspiration and co-operation with others that the Company maintained a technical superiority, not just in Britain but worldwide.

The Company's Patents
The Cooke & Wheatstone patents applicable in Britain acquired by the Company, there were six in all, both joint and individual, not only covered the principle of the electric telegraph in the initial master patent (although in that they claimed "improvements" and not "invention") but also a large number of technical innovations. Their telegraph patents subsequent to 1838 included a range of double and single needle instruments, dial instruments, printing instruments, circuit 'bridges', the 'detector' for determining circuit breakage, overhead poles in wood and metal, overhead insulators, underground wires, lead sheathing and just about everything else required to create a comprehensive telegraphic system. By and large Wheatstone originated the 'electrical' elements, instruments and such like. W F Cooke devised the 'technical' elements, the methods for the making of the line and rationalised Wheatstone's apparatus into a commercial reality.



Cooke & Wheatstone's double-needle telegraph

As well as the patents of Cooke and Wheatstone the Electric Telegraph Company, between 1846 and 1850, acquired an expensive suite of other telegraphic and electrical patents, pre-existing and new, that served to protect its commercial interests – that is, preventing others using them in alternate circuits. The 'relay' or 'repeater' of Edward Davy of 1838 essential for extending the length of the electrical circuit, the chemical telegraph of Alexander Bain of 1848 which 'wrote' a mark on treated paper, as well as several improved insulators for its poles, were purchased and used in its circuits, and oddities such as Charles Massi's "percolating battery" of 1847, which it did not even utilise.

By April 1848 the Company, in addition to Cooke & Wheatstone's two-needle apparatus, had installed the Bain writer on separate electrical circuits between London and Birmingham (112 miles) and Liverpool and Manchester (32 miles), and a direct Bain circuit was just about to be opened from London to Liverpool (226 miles). The Bain chemical writer was the British equivalent of the American telegraph, using a key to record marks on a distant moving strip of paper, and was used by the Company for volume traffic. These instruments used "Bain Code" of dots and dashes, which meant that its clerks had to learn three codes, double-needle, single-needle and Bain.

Among the other patents acquired from Alexander Bain was that for his *Electric Clock*, which the Company intended to manufacture and used at most of its principal stations for time-keeping and as a publicity tool. The spread of these remarkable timepieces was unfortunately limited by the disinterest of the Electric company in their manufacture and marketing after 1849. Bain later bought back the clock patent.

The Company's *Clock Department*, under John Kymer, was located at 142 Strand, where it had showrooms, with workshops, formerly Alexander Bain's, at 11 Hanover Street, Edinburgh. In 1848 manufacture was transferred to William Reid, the telegraph engineer, at 25 University Street, London.

Cooke & Wheatstone's patents applied fully only in England and Wales. Different patents applied in the two other kingdoms, Scotland and Ireland. This allowed the Edinburgh & Glasgow Railway (which was soon to become the North British Railway) to install Alexander Bain's instruments on Cooke & Wheatstone's line in 1845. It used Bain's so-called "I & V telegraph", a simple single-needle device. The Company acquired the wayleave along with Bain's other rights in 1846, immediately replacing his apparatus with Cooke & Wheatstone two-needle instruments.

In 1847 the Company sued the proprietors of and eventually acquired the rights to Nott & Gamble's widely-publicized telegraph, simply to suppress it; and bought Little's telegraph patent in 1850 with the same negative intent. It had also acquired Henry Highton's 'gold-leaf' telegraph and Henry Mapple's electric alarm in 1846 as part of its policy of excluding others from its market.

On the isolated circuits alongside of the South Devon Railway the Company installed W H Hatcher's patent double-index dial telegraph specifically for train control in 1847. Hatcher was the Company's first engineer and chief manager.

The Company's first underground telegraph circuit in London was laid late in 1847 beneath street footpaths to connect the Strand offices with the South-Western Railway's overhead wires at Nine Elms station.

It sought and obtained formal permission of the City Commissioners of Sewers to open up the footpaths and lay down underground wires on March 16, 1847, including a conduit to Lothbury in the City of London. In the same week the government instructed the Company to extend the wires from the Strand office to the Admiralty building in Whitehall, so that there would be direct communication with the naval dockyard at Portsmouth, from there rather than from Nine Elms.

The newspapers reported its laying during the first week of November 1847. It ran from the terminus of the London & South-Western Railway at Nine Elms, along the Wandsworth Road, across to Vauxhall Gardens, Kennington Lane, Kennington Road, Oakley Street, Waterloo Road, under the western foot path of Waterloo Bridge, up Wellington Street to the Company's principal station at 345 Strand. It was laid eighteen inches deep in three-inch diameter cast-iron pipes, coated inside and out with hot pitch. The pipes contained two half-inch diameter "leaden tubes", also

tarred on the outside, each containing four copper wires covered with cotton and waterproofed with india-rubber. The leaden tubes, as originally patented by W F Cooke, were made in lengths of 100 and 250 yards; as each was joined together the eight circuits were tested with a battery and a “detector” or portable galvanometer.

A set of nine underground wires was also completed on November 19, 1847 in Liverpool from the Lime Street station of the London & North Western Railway to a new city centre office at Exchange Buildings. They, too, were laid in an iron tube; a set of branch circuits leading off to the docks for future use.

The ‘Morning Advertiser’ in London reported the development of the Electric Telegraph Company in Manchester. By August 12, 1847 they had taken temporary occupation of the Committee Room at the Exchange on the Ducie Street side, intending to move to permanent first floor offices with a 100 foot long subscription room in the Exchange on the Exchange Street side. John Pope Cox was then appointed “agent and superintendent” for Manchester. Use of the telegraph was to be confined to subscribers. On that day there was a single double-needle instrument in use, with a trough or battery of twenty-four plate cells beneath its table.

The report noted that the telegraph was then open only between the Exchange and the Victoria railway station of the Manchester & Leeds Railway. There were eighteen copper wires covered with cotton and coated with pitch or tar, enclosed in two lead sleeves and contained in iron “gas pipes” laid beneath the curb stones of the foot paths from the Victoria station by Hunt’s Bank, across Cateaton Street, along Victoria Street, across Market Place to the Exchange Building. Only two wires were being used on August 12.

The opening of the telegraph throughout the Manchester & Leeds Railway was anticipated before September 3, 1847; it already being complete from the Victoria station to Rochdale, 11 miles distant, the main delay being construction of the circuits through the Summit Tunnel, before reaching Normanton, 51 miles, where it joined the North Midland Railway to reach Leeds. For this seven galvanised iron wires were being suspended overhead. Once this line was complete connection would be immediately made along the Midland Counties Railway from Normanton to Derby and to Rugby on the London & Birmingham Railway, and from Normanton to York and Newcastle-upon-Tyne by way of the York & North Midland Railway, which lines already had the telegraph installed and working. Work then in progress included a connection from Hunt’s Bank along the Liverpool & Manchester Railway to Liverpool, expected within a week.

Rugby continued to be the southern terminal for “live” messages for a couple more months. They were, until the line was completed, forwarded by train to London.

The Manchester telegraph office already had on display a Bain electric clock.

The immensely important long line from the capital to Liverpool and Manchester along the London & North Western Railway, as the combined Grand Junction and London & Birmingham companies had now become, was finally completed on November 13, 1847. The separate railway-based telegraph systems in the midlands, north-east, east, south east and south west of England were, at last, connected through the London hub. The Electric Telegraph Company now possessed a national network - the first in the world.

In August 1847 the ‘Kentish Herald’ newspaper reported that “The Electric Telegraph Company are now making arrangements to communicate the true time, as observed daily at the Royal Observatory at Greenwich to every station on the various lines of railway where the Company has a telegraph station, and, of course, to all large towns throughout the kingdom. It is now the daily practice at Greenwich, at 1 pm, to indicate the true time by dropping a ball from the upper part of the Observatory, which being telegraphed to the Admiralty, and signalled to the shipping on the Thames, enables ships’ chronometers to be adjusted. The Telegraph Company intend that the ball, immediately on being detached at the top of its fall, should strike a spring, which, connected with the various lines of electric wires of the Company, will instantly strike a bell at every station. This it is not only possible and practicable, but what in all probability, will be a matter of daily experience ere very long – that before the ball at the Greenwich Observatory shall have reached the ground of its fall, the electric bell at Manchester will have struck and been set ringing; so that we shall know it is 1 pm at Greenwich before the ball announcing that fact has finished falling a few feet.”

Actually it was not until 1851 that the Company succeeded transmitting the exact time from Greenwich to its stations, although it was sending a simple time signal to keep uniform its own clocks daily from 1846.

As has already been said, with adequate capital assured the next four years saw a remarkable growth in connections and coverage, though not a comparable growth in dividends. The Company continued to use Wheatstone's two-needle telegraph, Cooke's overhead suspension system with its earthenware "barrel" insulators in all of its city-to-city circuits, and long-distance rights-of-way negotiated with the railway companies.

Overseas, the Electric Telegraph Company acquired of Cooke & Wheatstone their rights in Belgium for the 30 mile overhead four-wire line between the cities of Brussels, Mechelen and Antwerp alongside of the railway and opened the circuit on September 9, 1846 in their own name. It had telegraph offices in the centres of Brussels and Antwerp as well as at the railway stations along the route, all equipped with the two-needle apparatus. The message rate was one franc (equal to 10d) for twenty words. Traffic, as in England was low, confined to mercantile messages between the Brussels and Antwerp *bourses*. The Company was requested to construct a second line in 1847 to unite Brussels and Quiévrain, where the French telegraphs would connect, but declined to do so as it believed business would not sustain it. The concession was surrendered to the Belgian government on September 1, 1850 and the circuit incorporated into a state telegraph monopoly.

Two years of immense effort saw the construction of 2,000 miles of line connecting sixty major cities by November 1847: London, Manchester, Glasgow, Liverpool, Edinburgh, Leeds, Sheffield, Birmingham, Bristol, Newcastle, Hull, Wolverhampton, Wakefield, Derby, Leicester, Norwich, Nottingham, Portsmouth, Northampton, Bradford, Coventry, Dover, Canterbury, Halifax, Rochdale, Maidstone, Southampton, Gloucester, Cheltenham, Yarmouth, Cambridge, Colchester, Ipswich, York, Darlington, Margate, Stafford, Barnsley, Hertford, Ramsgate, Deal, Folkestone, Rotherham, Tunbridge, Winchester, Dorchester, Peterborough, Huntingdon, Chesterfield, Wisbeach, Lowestoft, Chelmsford, Berwick, Scarborough, Bridlington, Stamford and St Ives. Another thirty county towns were also provided; "all the chief seaports and seats of manufacture, and several watering places" were in circuit.

The Electric Telegraph Company's national public service was launched on September 1, 1847, although for this it was dependent on its still incomplete line from London to Rugby. The first advertisement listing its available stations and services, once this long awaited circuit was finished, appeared in 'The Times' on November 27, 1847.

Mr Maddox at the Princess's Theatre fortuitously announced a revival of the previous season's hit play, "Love's Telegraph" for the autumn of 1847.

The launch advertisement for the Electric Telegraph Company's network on September 1, 1847

Making News

The transmission of the Queen's Speech at the opening of Parliament to the country by telegraph became an annual event from 1846. The 'Shipping Gazette' of May 20, 1848, in distant Sydney, New South Wales, picked up a report from London:

"On Tuesday, (November 30, 1847) the electric telegraph was brought into active operation on a grand scale, for the purpose of transmitting the Queen's speech to the various large towns and cities throughout England and Scotland. An early copy of the Queen's speech specially granted for the purpose, was expressed from Westminster to the central station in the Strand, and at Euston-square, both of which places it reached by about a quarter past one. The manipulators at these stations, having touched the wires communicating with every telegraphic station throughout the kingdom, thereby sounding a bell at each, and giving the note of preparation, commenced throwing off in a continuous stream along the wires, successive sentences of the speech. This operation occupied from a quarter past one to a quarter to three, on the principal lines of telegraph, but considerably less than this - owing to the greater proficiency of the manipulators - on the Eastern Counties and South Western. It was completed to Southampton, where a steamer was in readiness to express the speech to the continent, in about an hour."

"During the two hours the speech was transmitted over 1,300 miles, to 60 central towns or stations, where one or more manipulators were occupied in deciphering the transmitted symbols. Immediately on its arrival at Liverpool, Birmingham, Rotherham, Wolverhampton, Leeds, Wakefield, Halifax, Hull, Rochdale, Gosport, Southampton, Dorchester, Gloucester, Leicester, Manchester, Nottingham, Derby, Lincoln, Sheffield, York, Newcastle, Norwich, Edinburgh, and Glasgow, the speech was printed and generally distributed, and the local papers published special editions."

"It was telegraphed at the rate of 65 letters in a minute, or at the rate of 430 words in an hour; several of the long words, such as 'embarrassments,' 'infringements' and 'manufacturing' taking longer time, no abbreviations being used, so that the 730

words (the exact number contained in the speech) were, including pauses and repetitions, disposed of in 120 minutes, or two hours. Owing to the old (Bain) telegraph between Edinburgh and Glasgow having just been taken down, so as to allow of the substitution of the new one, the intelligence had to be transmitted from Edinburgh to Glasgow by train, though by this medium the speech would reach Glasgow at four, or within two hours after its delivery in London."

"The last Queen's speech, being but half the length of the present one, was transmitted is half the time, reaching Norwich, 120 miles, in less than an hour."

During the previous year, in July 1846, the newspapers recorded the medical profession's first, and quite memorable, encounter with the electric telegraph: "a celebrated London physician was in communication with a Norwich physician, and through the agency of the electric wires, actually prescribing for a patient whose life was in danger". This took place over the lines on the Eastern Counties Railway and was to be just the start of a medical fascination with telegraphy, to the extent twenty years later of having private wires between doctors' residences and their hospitals.

In April 1848 the Electric Telegraph Company took a revolutionary decision and organised the first "agency" to collect and disseminate news by electrical means. This it called the "Intelligence Department", distributing information from London and overseas to subscribing newspapers, news-rooms and individuals in the provinces. Using its circuits at night when public traffic was negligible it became one of its most profitable operations, and one that was to be deeply resented by the envious press of the period. The Company also collected unofficial despatches from steamers arriving at Dover, Folkestone, Southampton and Hull, reporting the revolutions that were shaking many countries in Europe during that Spring and distributed them to the newspapers. In April 1848 it also circulated a "State of the Country" bulletin listing short comments from its provincial offices on any unrest in Britain.

There was a minor insurrection in the south of Ireland during the spring of 1848, in pale imitation of events on the Continent. Whilst it quickly fizzled out, the Electric Telegraph Company was subject to severe criticism for the apparently inflammatory and exaggerated nature of the initial news reports it gave of the violence, forwarded by sea from Dublin to Liverpool. It became clear that it had been fed false information both by the partisans of the insurrection and by one of its news distributing competitors in Liverpool. The latter, Willmer & Smith, further claimed that the Company's directors used the exaggerated news from Ireland to speculate in the Stock Market. Willmer & Smith were successfully sued for criminal libel by the Company, with the support of the government. Willmer & Smith owned part of a telegraph patent.

The 'Times' noted later the extreme nature of Wilmer & Smith's original message "that the [railway] station at Thurles had been burnt, and the rails had been torn up for miles, that the whole country behind was in total insurrection, and that some of the troops had gone over to the rebels. Within the day it was proved to be a hoax." The word "hoax" here being an understatement.

When the handful of insurrectionaries were placed on trial in Clonmel in Tipperary in front of a Special Commission in the autumn of 1848 the government in London instructed the Company to arrange despatches of its proceedings at least twice a day. John Pope Cox, its senior superintendant, was sent from the Manchester office to oversee the couriering of the despatches to the nearest telegraph on the English mainland.

The newspapers from the summer of 1848 daily carried articles subtitled "By Electric Telegraph", especially relayed from ports communicating with foreign parts.

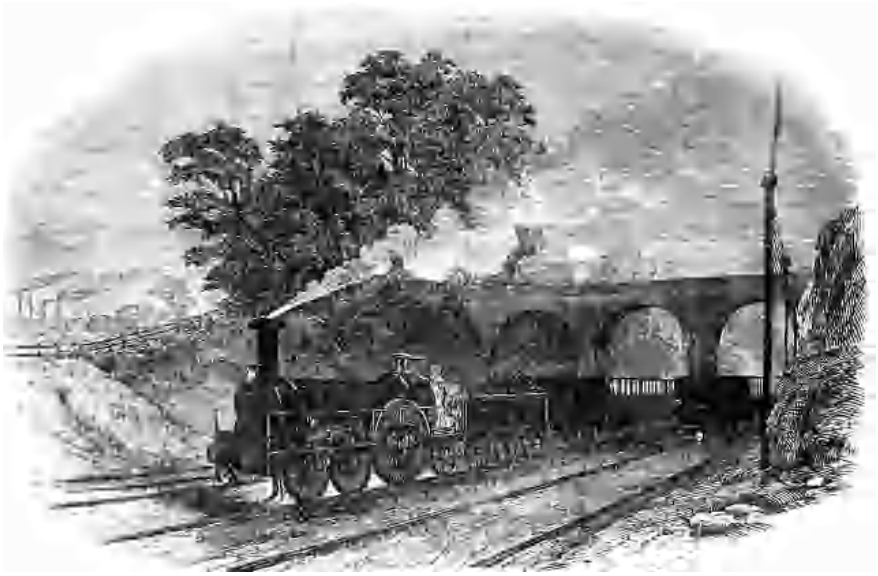
On April 11, 1849 an evening banquet was held in Wakefield, Yorkshire, to honour the popular radical politician Richard Cobden. The event was of such political importance, with much speech-giving, that 'The Times' newspaper made special arrangements to cover it with the Electric Telegraph Company. The banquet finished just before 12 midnight, "the whole process of reporting, transcribing, telegraphing, re-transcribing, typesetting and printing, was accomplished in less than four hours after the words were spoken". Three columns of solid type, out of six on the broadsheet page, covered the event in the paper's April 12 edition which was on the streets at 3 am that day.

The results of the great horse racing meetings were being reported by telegraph; from Newcastle on June 23, 1848, from Doncaster on September 7, and even from

the headquarters of thoroughbred racing at Newmarket on October 11 of that year. A "horse express" was employed in the latter event to carry the results from the winning post one-and-a-half miles to the electric telegraph at the railway station.

It was not all positive, the Birmingham Stock Exchange recorded on May 9, 1849, that "on receipt of the London Prices by telegraph at midday a depression amounting to a panic occurred with respect to some descriptions of stock". Shares in several locally-based railways were wiped out, at least temporarily. The news-making power of the telegraph was slowly becoming recognised.

Despite, or because of, the previous year's little insurrection, the Queen and Prince Albert made a state tour of Ireland in the late summer of 1849 visiting Dublin and Belfast. They returned by way of Scotland. On September 28, 1849, Her Majesty left for Osborne on the Isle of Wight, leaving Balmoral at 8 o'clock. The progress of the royal pair were noted along the Scottish Central Railway, the Edinburgh & Glasgow, the North British, on to the lines in the north east and the Birmingham & Derby, Birmingham & Gloucester, and Great Western railways, changing at Basingstoke to a five carriage train on the London & South-Western to arrive at the Royal Clarence Dockyard, Portsmouth, where the steam yacht Fairy carried the Queen and the Prince Consort to Osborne on September 29. All this is known because the course of the royal party was followed almost hourly in reports by telegraph in the London morning and evening newspapers. Expectations of the new medium were so high that the journalists complained that there was no telegraph yet on the Great Western Railway to report the royal train!



The telegraph on the Great Western Railway 1849
The broad gauge mail train near London in January 1849
The Cooke & Wheatstone telegraph posts at right

A National Network
On April 23, 1849, J Lewis Ricardo, the Electric company's chairman, was able to report that its telegraphs in the United Kingdom encompassed 150 towns from Glasgow in Scotland to Dorchester in south-west England, from Yarmouth on the east coast to Liverpool on the west coast. Its central office and five branch offices in London employed sixty people; each of its country offices employed from two to ten clerks, excluding messengers. There were, he said, 2,060 miles of line composed of 9,800 miles of iron wire and 61,800 poles. In London and other cities resin-insulated copper wires were laid 'invisibly' within iron pipes under the streets. The cost of a twenty-word message over its longest circuit, the 520 miles between London and Glasgow, was 14s 0d. On the heavily-used circuit between London and Liverpool a twenty-word message cost 8s 6d (i.e. 168d and 102d, at a time when the cost of delivering a Post Office letter was 1d). The Company had a minimum charge of 2s 6d. Its employees he categorised as officials, clerks, mechanics, battery-men and messengers.

Ricardo finished with an eloquent justification of the Company's oft-criticised tariff; revealing, too, its view on the custom it expected, primarily mercantile:
"The telegraphic system is designed for important and urgent messages, and could I violate the secrecy which I feel bound strictly to observe, I could show that not one despatch in a hundred has been forwarded which has not been worth many times the

amount paid for it by the sender.

“A commercial house in Liverpool will scarcely grudge 8s 6d for a communication by which a necessary payment may be made, an important order given, or a profitable operation facilitated in London; and the message from Glasgow, which traverses a distance of 520 miles in an instant, to summon a son from the metropolis to the bedside of a dying parent is scarcely to be judged overpaid at a charge of 14s - considerably less than ½ d per mile.

“A long and expensive journey is prevented, or a necessary one hastened - a bill accepted or protested - a purchase effected or countermanded - an important witness is summoned - the arrival or loss of a ship is announced - an insurance is effected - advice is asked, or orders given - in fact, an endless variety of important announcements, questions, and replies pass daily through our numerous receiving houses, and, I can honestly aver, have for the most part effected, and have been acknowledged to have effected, an economy and convenience far beyond the 1d per mile of our tariff.

“An express message sent by porters or by cab from the city to the west end of town - say from this office to the House of Commons, a distance of four miles, will cost 2s 6d, and if the same message can be sent from Manchester to Liverpool, a distance of 30 miles, for the same sum, and in a shorter time, it cannot surely be deemed an extravagant demand.”

It is illustrative of the Company’s difficulties to follow how the longest circuit between London and Glasgow in Scotland was achieved. This necessitated alliances with seven separate railway companies, zigzagging across the length of the country. It followed the rails of the London & Birmingham company towards the north-west between those two cities, hence to the north-east by the Birmingham & Derby, by the North Midland from Derby to Leeds, by the York & North Midland from Leeds to York, by the York, Newcastle & Berwick to the border town of Berwick-on-Tweed, then due north into Scotland by the North British Railway from Berwick to Edinburgh and before going due west by the Edinburgh & Glasgow Railway.

The much shorter direct route north-west to Scotland was by way of the London & Birmingham and Grand Junction lines (consolidated then as the London & North-Western Railway), the North Union (running from the Grand Junction to Lancaster), the Lancaster & Carlisle and the Caledonian Railway from Carlisle to Glasgow; just four companies! But the Caledonian resisted the Electric’s advances; its west coast wires never got beyond Carlisle.

The Telegraph and the Railways in 1847
Compiled by The Civil Engineer & Architect’s Journal
January 1848

1839 - Great Western
.....London to Slough.....19 miles
1842 -London & Blackwall.....5
1844 -Yarmouth & Norwich.....20
1845 -London & South-Western.....99
1845 -Eastern Counties
.....London to Colchester.....51
.....London to Cambridge.....88
.....Hertford branch.....7
.....Ely & Peterborough branch.....29
.....Thames Junction branch.....3
1845 -South Eastern
.....London to Dover.....88
.....Ramsgate branch.....30
.....Margate branch.....4
.....Maidstone branch.....10
1846...Tunbridge Wells branch.....6
.....Bricklayers’ Arms branch.....6
1847...Deal branch.....9
1845 -Norfolk Railway
1847....Norfolk to Brandon.....38
.....Lowestoft branch.....10
.....Dereham branch.....13

1846 - Midland Counties
.....Rugby to Derby.....49
.....Birmingham to Derby.....41
.....Derby to Normanton.....73
.....Nottingham to Lincoln.....41
.....Sheffield branch.....5
1846 -York & North Midland.....23
.....York to Scarborough branch.....43
1846 -Hull & Selby.....40
1846 -York & Newcastle.....84
.....Durham branch.....2
.....Sunderland branch.....5
.....Shields branch.....8
.....Richmond branch.....9
1845 -Sheffield & Manchester
.....Summit Tunnel.....2
1846 -South Devon.....20
1845 -London, Brighton & South Coast
.....London to Croydon.....8
1846 -Preston & Wyre
.....Preston to Fleetwood.....20
1846 -Eastern Union.....17
1846 -London & North-Western Railway
.....Wolverton to Peterborough.....57
1847 - Midland
.....Syston to Peterborough.....40
1847 -Leeds & Bradford.....15
1847 -Manchester & Leeds.....61
1847 -York & North Midland
.....Hull to Burlington.....27
1847 –York, Newcastle & Berwick.....60
1847 -South Devon extension.....27
1847 -London & North-Western
.....London to Rugby.....82 ½
.....Rugby to Newton.....111 ¾
.....Liverpool to Manchester.....31 ½
.....Crewe to Chester.....30 ¾
1847 -Southampton & Dorchester.....60
1847 -Midland
.....Bristol to Birmingham.....90 ¼
1847 -Edinburgh & Glasgow.....46

Prior to 1845 less than 45 miles of electric telegraph had been constructed, in 1845, 500 miles were laid; in 1846, 600 miles and in 1847, 1,000 miles.

It was the Electric Telegraph Company's enduring relationship with the London & North-Western Railway, the so-called *Euston Empire*, the largest railway company in terms of capital in the world for most of the nineteenth century, and the most profitable, which guaranteed its success. The railway company, a brutally effective concern, controlled from its head offices behind the huge Roman arch it erected at Euston Square in London, almost from its creation the routes from London to Birmingham, Liverpool and Manchester, and, through its allies, the main routes to Glasgow and Edinburgh in Scotland, and to Holyhead, the port for Ireland. As well as providing the telegraph's most profitable wayleaves the railway's tough, anti-competitive management style was to be imitated by the Electric company during its middle years.

However the connection with Euston Square was not as simple as it might seem; in 1846 and 1847 the machiavellian railway company had employed Edward Highton to develop new, patent-evading apparatus. It installed his instruments experimentally on its long single-track branch between Northampton and Peterborough, and on its Liverpool & Manchester, Leeds & Dewsbury and Manchester & Huddersfield subsidiaries, but it went no further with Highton or his theories. Once Cooke & Wheatstone's master patent expired in 1851 Highton was to go on to create the first competitor to the Electric company. The North-Western had also allowed John Nott to install his dial telegraph on its short branch between Northampton and Blisworth. But by 1850 the Might behind Euston Square had become the Electric's staunchest associate.

As an example of the earliest arrangements with the railways, the Company's contract with the York & North Midland Railway was reported as costing the railway £24,634 for 159 miles of line by 1848. The arrangement was rather loose; the lines had been erected at the railway's cost, except for two wires over its system set aside for the Electric's use. It was first posed that the lines would be worked at the telegraph company's expense and that the revenues would be divided once they got above a certain sum. There was no formal agreement on this as it was said to depend on the telegraphic arrangements made with the railways with which the Y&NM connected. The telegraphs at the smaller stations in 1848 were worked by the railway's clerks, at the larger by the telegraph company's clerks; the latter working the railway's messages without charge. The net result of this vagueness was confusion regarding the money received for commercial messages at the two sorts of station: some was paid to the railway's account, some to the Electric Telegraph Company's account and some was simply kept by the clerks. The railway's shareholders expressed indignation in 1848 at their Board's handling of the matter.

Shareholder anger was justified. A little later the peculiar state of the telegraph on the York & North Midland Railway was clarified. On October 27, 1849 it was established that of their 195¾ miles of railway line, 98¼ miles had been furnished with the telegraph at the cost of £24,634; and that the railway was committed to a total expenditure of £35,000 to complete the work; but "no account had yet been rendered by the Electric Telegraph Company of expenses or revenues." This was because the contract had been made personally in the name of the railway's chairman, George Hudson, acting as an intermediary, who billed the railway for that arbitrary sum. The true cost of their telegraph before Hudson's "cut" was kept from the shareholders.

A more ordered, and more typical, arrangement was that with the Midland Railway, with a large mileage centred on Derby. This concern worked its own public telegraphs until December 4, 1847 when operation was transferred to the Electric Telegraph Company. The costs of maintenance after that were to be charged two-thirds to the railway, one-third to the telegraph company; and the receipts from commercial messages were to be divided one-quarter to the railway and three-quarters to the telegraph company, railway messages being free of charge. The telegraph company would find the clerks for their commercial stations and the railway company clerks for all other places it required.

The Board of Directors of the Midland Railway Company in August 1849 justified this arrangement not as a source of profit but as a means of preventing accidents. It also noted then that when worked by the railway the electric telegraph "was frequently getting out of order", but now they were worked by the Electric Telegraph Company, and "had all their own messages conveyed for nothing and half the proceeds from private individuals who made use of it."

The East Anglian Railways committed £4,000 to install the telegraph on their 67 miles of line on February 17, 1848, "because it would save more than that amount in the working plant... from the facility to forward carriages and trucks to where they were wanted... instead of keeping stock in hand..."

Public messages were in any case few; the Electric's income in the first quarter of 1848 was just £160, in the second £200, in the third £320, and in the final quarter, £400. Intelligence in bulk, 'news', was the principal traffic in the first five years, supplied to the public press, local news-rooms, stock markets, produce markets and commercial rooms.

Wyndham Harding, a statistician, recorded the limited technical performance of the Company's circuits in August 1848:

"The rapidity of communication with which a message is practically transmitted, appears from the following facts, kindly furnished to me by Mr Hatcher, the manager of the central establishment of the Electric Telegraph Company in Lothbury."

"The average number of words in the messages from London to the North are 198 [daily]. The average rate of spelling by the telegraph is 55 letters, or 10 words per minute. Average time, therefore, of transmitting each message, 20 minutes. The Queen's speech of 750 words, thus occupied in the transmission, 1 hour 15 minutes."

By November 1848 the Company had opened subscription news-rooms in Edinburgh, Manchester, Liverpool, Leeds, Glasgow, Hull and Newcastle, as well as

London, “for mercantile and professional interests”. News, market intelligence, parliamentary reports and weather reports were made available to individual subscribers paying 21s a year for entry. In addition to the latest news subscribers were accommodated with the comforts of leather sofas and coffee. By 1849 the subscription had doubled to 42s, permitting entry to all of the Company’s news-rooms.

Subscription Tickets to the news-rooms were issued annually; curiously dated from Christmas Day. They were lithographed on white card, the colour of the ink changing each year to prevent misuse. They had the Company seal in wax on their face, along with the subscriber’s name and the secretary’s signature.

Regarding *private intelligence*, businesses could have the bankrupts’ list, corn market, share market, Tattersall’s (the off-course horse-racing gambling market) betting list, dissolution of partnerships, Bank of England or provincial bank returns, cattle or hay market prices, corn or sugar advances sent to them at individual rates from 2s 6d to 7s 6d a message, less if contracted for more than six months. Racing intelligence, shipping news, political intelligence, judgements of law cases, and notices of trial could also be forwarded by arrangement, on annual subscription.

There was great consolidation of resources in 1848; the original plan of having a single large station in the centre of London had proved a mistake. The premises in the Strand were let go and a house taken in the City, at 64 Moorgate Street, for the Company’s administration, and a huge public office planned for its principle source of business - the financial and mercantile district of the City of London. The Company also disposed of the clock workshops in Edinburgh and moved its instrument factory in Bouverie Street to the depot and wharf at Church Row, Limehouse, during 1848. The instrument shop in Limehouse was retained until 1851, making and repairing electrical apparatus.

Founders’ Court

After two years of existence the Company was able to complete an impressive, ‘statement’ head office with a prestige public hall in the City of London “within a few minutes walk of the Bank of England, Stock Exchange, Royal Exchange, Lloyd’s (for shipping), the joint-stock and private banks, assurance offices, in the heart of business, and not far from the Corn Exchange, Commercial Rooms, Coal Exchange, and the seat of the Manchester warehouses and colonial produce warehouses.” It was a building intended to portray its maturity in public perceptions. It was designed by Henry Arthur Hunt, of 8 York Road, Lambeth, a surveyor and architect much employed by Morton Peto, the railway contractor and soon-to-be director of the Company. The builders were Thomas Piper & Son, of 173 Bishopsgate Street Without, City, who had made many public buildings in London.

So January 1, 1848 saw the opening of the company’s Central Telegraph Station at Founders’ Court in Lothbury opposite the Bank of England in the City of London, at which time it had 1,524 miles of line in use or under construction. Although tucked away up a narrow court-yard this was an imposing building, containing a large colonnaded public hall lit by a great central skylight around which were two open galleries each divided into six instrument compartments. Having no conventional windows it was lit by gas, day-and-night, and had a basement warm air heating apparatus.

The ‘Illustrated London News’ described the grand new premises in its issue of January 22, 1848:

“The Central Station of the Electric Telegraph Company, at the end of Founders’ Court, in Lothbury, is one of the best of the recent architectural adornments of the city of London. It exterior, though necessarily limited in width, is very bold in character and picturesque in detail; whilst the interior is remarkably elegant in arrangement and profuse in ornament. Many of our readers are thoroughly conversant with the narrow passage called Founders’ Court, in Lothbury, in the rear of the Bank of England; but to those who are not called by business or pleasure, or both, into that region of gold, the centre of commercial London, it is necessary to mention that Founders’ Court is not above

thirteen feet wide, and therefore the architectures enrichments of the front of the Central Telegraph Station are of very simple character. A boldly-designed doorway – the keystone ornamented with a head, nicely sculptured – springing from rusticated work; above it a balcony, supported by trusses, having wreaths of flowers pendant upon them; two enriched Ionic pilasters, supporting an entablature, simply ornamented, but in excellent style, and carrying an arched pediment – and, in the space between them, a clock, on a plinth, having sunken panels, and supported at the sides by inverted trusses, - are the leading points of the architectural arrangements, and produce a very satisfactory effect. Above the clock, and depending at its sides, are fruits and flowers, in high relief, exceedingly well done. In a panel, at the upper part of the building, are the words 'Central Telegraph Station.'

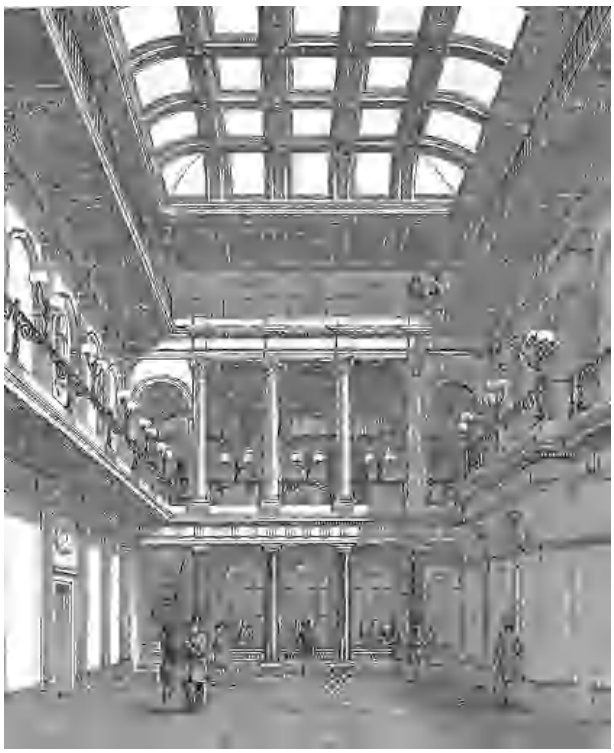
"A flight of six steps leads to the interior of the edifice; and on entering the Hall the visitor is struck by its novel and beautiful effect. The space of ground occupied by the entire building (exclusive of subscribers' rooms) is about 70 feet by 38; and great praise is due to the architect for the skilful mode in which he has arranged his plans, so as to give a capacious Hall for the general business to be transacted in, and yet allow of space for the utmost freedom of access to the different rooms in which the electric correspondence is carried on. The greatest length of the building is from east to west, the shortest from north to south; and in plan the Hall, which is in the centre of the building, is nearly a square, being about 42 feet from east to west, and in the other direction extending the whole depth of the building, within the walls – that is 32 feet.

"At the east and west ends a screen of two stories crosses the hall, in the manner shown in our Engraving, the first storey being supported by columns of the Doric order, painted in imitation of porphyry, resting on plinths, in imitation gold-veined marble, carrying the proper entablature and frieze; and the upper storey by columns of the Corinthian order, the shafts painted in imitation of sienna marble, their capitals and bases of white. These stories form capacious galleries, having communication with the apartments in which are the Electric Telegraph Machines; and, to connect the two ends of the building, galleries, of nearly the width of the first intercolumniation from the wall, run along the northern and southern sides. These galleries are supported by trusses springing from the frieze of their respective stories. The trusses to the upper storey are very highly enriched, and of beautiful design; those to the lower of plainer though elegant outline. The blank walls, running from east to west, have pilasters corresponding in order to the pillars of the screens and painted like them; and, in the intercolumniations, are arches springing from small pilasters attached to the larger ones. On the south side s the entrance from Lothbury, and the door projects somewhat into the Hall, to allow room for the porter, while the gallery before-mentioned follows the projection as shown in our view. Immediately opposite the Lothbury entrance is a small doorway leading into the Subscribers' Rooms, and above the doorway is a dial clock. A continuous rail, of light and elegant design, runs along the lower galleries, and is also introduced in the spaces between the columns at either end, and from it spring branches for gas-lights. A railing of plain by close pattern also bounds the upper galleries.

"The glazed windows behind the counter separate and office, called the "translating office," from the body of the Hall. In this office all messages are transferred or translated into the abbreviated code arranged by the Company; but it is to be observed, that all such message as descriptions of persons suspected of dishonesty are not translated, but sent in full; only the lists of prices in corn, share, and other markets are so abbreviated.

"These windows separate from the body of the Hall offices for clerks, in communication with those employed at the machines above; and who have to receive messages through the sliding panes before noticed, and transmit them to their fellow clerks above stairs, by the aid of 'lifts,' or small trays working up and down, by means of cords, in square tubes. There is a 'lift' and a bell in connexion with every desk. The motive power to these lifts is given by the clerk at the desk above, who, on his alarum being touched, turns a winch, and elevates the tray in an

instant. As there are separate 'lifts' to each desk, so, of course, there are separate tubes for each to work in. On the first storey the apartments, in which are the machines, are not nearly so lofty as the Corinthian pillars would seem at first sight to indicate them to be; in fact. This storey is divided into two, by a floor, which does not project so far forward as the series of archways, which both ornament the walls and allow ingress to the machine-room; and therefore a plain railing is carried along to make all secure. In our View, the second flooring, and the hand-rail, is shown in the archways behind the Corinthian columns.



The Public Hall of the Central Telegraph Station 1848
Looking east at one of the two public counters,
the main entrance is to the right, the subscribers' room
through the door to the left
Click on the image for a larger view, click on Previous Page to resume

"The roof of the Hall is very effective in its character, and as all the light the Hall receives is from this source, a large portion of it is glazed. In plan, the roof is crossed, transversely and longitudinally, by four large beans, so arranged as to leave a square space of about 27 feet wide in the centre, the other portions of the roof are ceiled with deeply moulded and ornamented panels, divided from each other by beams, having on their soffits enrichment of the Etruscan fret pattern. The square space before mentioned is not vacant, but is covered at the sides, and sub-divided into twenty-five deeply sunken panels, (each glazed with rough plate glass,) by beams crossing each other. The under sides of the beams are very richly decorated with a double guillorbe pattern running along them; at the intersections, are pendant ornaments. The sides of the panels are also embellished with minute ornament, and the whole of the details are beautifully worked out. The ceilings, to the lower galleries, have rich flowers in the centres of the panels.

"In the machine galleries the wires are carried along the ceilings from the respective machines to the battery chambers and the test box; the battery wires running east and west, and the 'house wires' to [the] test box, north and south. The desks and machines, which are of Cooke and Wheatstone's Patent, are all of polished mahogany, and are very beautifully fitted up; and there are eighteen desks, thus affording accommodation for thirty-six machines, in the six apartments devoted to them. All the wires are numbered at the desks, to correspond from batteries to machines, and from machines to the test box, that the electric circuit may be complete.

"The west side of the building is devoted to transaction of the business connected with the cities and towns on the North-Western lines, and also to the Great Western; whilst the eastern side is for the service of the Eastern, South-Eastern, and South-Western lines, and the Admiralty.

"Supposing a message is required to be sent to Liverpool, the sender goes to the counter on the west side and hands the message, written out, to one of the clerks there, who takes the money, and gives a receipt for it. The written paper is then passed to the translating office, where it is duly transferred into the code arranged by the Company. This done, the clerk touches the alarum, and puts the message on the 'lift' for Liverpool, which is immediately drawn up by the clerk at the machine, who instantly sets to work, and, in a few seconds, the message reaches its destination!

"Having said thus much about the structure erected for the purposes of the Company, we will descend into the basement of the building, and describe the apparatus by which communication is carried on, and for which there are large vaults well-lighted up with gas.

"The wires from the several railway termini are brought through iron pipes, laid down under the pavements of the streets; and, meeting in Founders' Court, are brought through the south wall of the basement of the station ...; and, descending into a long box, called the 'test box', are fastened into the back of the box. At the bottom of the test box run a corresponding number of wires, called the 'house wires', and these go to the machines in the galleries. Connection is maintained between the line and house wires by small wire running perpendicularly from one to the other. The 'house' wires are numbered from 1 to 81 consecutively, and the others according to the respective stations whence they come. Thus, the North-Western Railway Station, in Euston Square, has twenty-seven wires in connection with it; the North-Eastern and Eastern Counties, nine; the South-Eastern, nine; the South-Western, nine; and there are nine in connection with the Admiralty; besides eighteen in spare tubes, for any future period. The Great Western has no separate communication with the Central Station, as the telegraph lines only go as far as Slough; therefore, all messages are sent via the North-Western as far as the Kensington branch railway, then along that to the Great Western to Paddington, whence they proceed to Slough. All communications with Bristol are sent to Birmingham, and thence by Birmingham and Bristol line of telegraph.

"The reason why so many wires are laid from the Central Station to the railway termini is lest any of the wires become defective, when the connection can be carried on by other wires, as the expense of taking up the pavement would be enormous for so slight a cause. The test box is usually kept closed by shutters, and machines are kept handy to test and of the wires which may be signalled as weak.

"... one side of the Battery Chamber... is for the service of the North-Western line. ... the wires from the several machines enter the room, and are carried to the respective batteries. [There is] ...but one series of batteries on each shelf; but, in reality, they are arranged in pairs or nearly so; and some shelves contain five, others six and seven, batteries each. Should a battery become weakened by evaporation, the wires are instantly carried to other batteries. The batteries are the old-fashioned ones on Wollaston's principle, and contain 23 pairs of plates each, with intervening spaces being filled with sand, moistened with acid diluted with about 16 parts of water.

"The Subscribers' Room is a very handsome apartment, having a roof of similar open character to that of the Hall, though not of such extent, and the glass filling the panels is engraved on a dull ground. The enrichments are of different design, but very excellent style and execution. When complete, with its tables, chairs and other furniture, this room will have an exceedingly piquant character.

"There are offices for the Engineer and Superintendant in rooms above the machine rooms, on a level with the roof.

"The gas lights are on Faraday's principle of ventilation.

"The several clocks in the building are all Bain's electric clocks, as is the illuminated dial in the front of the building.

"The building is thoroughly warmed by hot air, but the ventilation of it is by no means on a good system, as the machine rooms and upper galleries are excessively hot and unpleasant.

"The whole arrangements relating to the batteries, wires and general working business of the Company are entrusted to Mr N Holmes; and it needs but a brief glance at the completeness with which everything is ordered, and the perfect system which reigns through every part of the building, to show how successful his arrangements are, and how worthy the highest possible praise.

"We must here observe that this Station of the Company is not publically opened yet, as the whole arrangements are not quiet complete; and that, though messages are sent through it, they are merely done so for the accommodation of the public.

"The building is from the designs of Mr H A Hunt, of Parliament Street, and, as we have before said, does infinite credit to his taste and skill; and we need but mention the name of Mr J Thomas of Lambeth, to whose care all the modelling and decorative enrichments were entrusted, and whose great facility of invention has been so conspicuously displayed in the New Palace of Westminster, to show that in detail the work is a felicitous as in general arrangement. The builders were Messrs Piper."

"The wires from the several railway termini having been carefully covered with cotton and insulating material, are enclosed in a leaden or other tube, all the interstices between which and the wires, are filled with some non-conducting substance. Thus protected, the wires are safe from the action of damp; but to secure the soft leaden tube from injury by pressure, when laid underground, it is enveloped in some insulating matter, and passed through pipes of iron, buried at a safe distance beneath the surface of the earth."

These wires were carried from the Central Station under Founders' Court alley and the streets to the four railway termini, to the Strand and to the Admiralty – at the railway the line wires emerged to become iron wires suspended from wooden poles.

The house and line wires were connected together at the so-called test-box in the basement through two rows of metallic pegs and moveable brass loops, enabling switching to be made between the sixty-six circuits. The current from each cell was about one volt.

As the anonymous journalist noted, the Central Telegraph Station then possessed thirty-six double-needle instruments in its upper galleries for all its circuits; each instrument had designated lines to serve. A simpler single-needle instrument was being introduced at this time on rural lines. In the attics of Founders' Court was a Bain chemical telegraph, the first so-called fast or automatic apparatus, for sending and recording bulk messages such as news, the main traffic in 1848-50, at high speed. This device was used on the busiest circuits to Liverpool and Manchester, and between the Founders' Court and the Strand offices in London.

A separate tour conducted by Nathaniel Holmes, the station manager, for the 'Athenaeum' magazine in the same year added the following information:

"Each apartment is provided with an electrical clock shewing true London railway time - which, as our readers know, is observed throughout the departments."

"On a level with the rooms in which the wires are received are several long and narrow chambers devoted to the batteries. Of these there are 108 - each battery consisting of 24 plates. Sand, moistened by sulphuric acid and water, is used as the exciting medium. The batteries thus charged are found to remain above a month in good working order."

"We were surprised on making inquiry to find that the charges are much more moderate than we were led to expect from statements in the public prints - which set forth that the transmission of a message cost £5. How exaggerated this is, will be seen by the following charges, taken from the books of the company: - For a message not exceeding twenty words - to Berwick 12s 0d; Birmingham 6s 6d; Bristol 13s 0d; Edinburgh 13s 0d; Gosport 6s 6d; Liverpool 8s 6d; Manchester 8s 6d; Glasgow 14s 0d; Southampton 5s 6d; Yarmouth 7s 0d. When it is borne in mind that the company have laid down 2,500 miles of wire, and have upwards of 1,000 men in their employ, it cannot be said that the above scale of charges is exorbitant. There are at present 57 clerks employed in the department of transmitting and receiving messages - independently of those occupied in printing communications for the newspapers. This department is exceedingly interesting. It is carried on in a long room communicating with the west gallery."

This department used the chemical telegraph which printed symbols: "The alphabet used is as follows:- A . - B . - . C ... D ..- E - and so on; finis being always represented by a long dash ----. Hieroglyphical as all this may appear, the characters are read with the greatest ease by the parties concerned in the operation. It is carried on with wonderful celerity - 1,000 letters being printed each minute at stations two hundred

or more miles apart."

"We shall attempt to describe the process... A slip of paper about a quarter of an inch broad is punched with holes at distances corresponding to the dash lines shown above - these holes being the letters. Two cylinders - one, for example, in London, the other at Manchester - are connected in the usual manner by electricity. Supposing it be desired by a party in London to print a message at Manchester - the slip of paper is placed over the cylinder in London, and pressed upon it by means of a spring which plays in the middle. Thus, when those portions of the paper which present no holes appear, the contact is broken; where the holes are presented, contact is made; - and accordingly, the current of electricity will be conveyed or broken to the cylinder at Manchester precisely in the same ratio as it is received from the cylinder in London. Over the cylinder in Manchester is wound a sheet of paper dipped in a solution of prussiate of potash and sulphuric acid; which enables it to receive - and record by dark green lines - the strokes of electricity given out by making and breaking contact with the cylinder at London. There are various ingenious mechanical arrangements connected with the process: which is the invention of Mr Bain."

There were originally thirty-four galvanic batteries each either thirty-two inches or twenty inches long by five inches wide. The largest battery contained twenty-four Cruikshank cells; the smaller twelve cells. From four to six 'twenty-fours' were needed for the longest circuit from London to Edinburgh. By 1854 the number had grown to 300 much improved Daniell batteries, which offered a constant current, in a mix of sixes, twelves and twenty-fours.

One legacy of the Company's arrangements at Founders' Court with its open public hall and surrounding open apparatus spaces on the superior floors was that instrument rooms in large offices were always known as *Telegraph Galleries*.

The complex electrical arrangements in the Central Telegraph Station were created in 1847 and 1848 by the station manager, Nathaniel John Holmes, who also managed the Company's workshops, and of whom much more later...

The Electric Telegraph Company's Secretary's Office
No 64 Moorgate Street (in the middle of the row)

The secretary's and accountant's offices of the Electric Telegraph Company were located from 1848 at 64 Moorgate Street; a very modest, plain mercantile house, part of a long block in a new City thoroughfare made up of offices and shops. It connected at the back with the Founders' Court public premises from its west side. The offices also provided the private entrance for subscribers to the City news-room. The Company retained this house for its management, accounting and engineering offices until 1859.

For some years from June 10, 1848, John Cuff, a hotel owner and wine merchant, occupied the ground floor of 64 Moorgate Street with his "Electric Telegraph Hall" refreshment and dining rooms, "Soups and joints always in readiness. Private room for dinner parties."

In 1859 the Central Station consisted, in addition to the pay hall, of three instrument galleries, the clearing office, the engineer's staff and the messengers.

Map of the location of the Electric Telegraph Company's Central Telegraph Station in Founders' Court, Lothbury, and its Secretary's Office in Moorgate Street (centre) and its later General Offices in Telegraph Street (top)
Click on the image for a larger view, click on Previous Page to resume

"Five minutes for all distances!"
During 1848 the Electric Telegraph Company reported that it had telegraphs completed alongside of the following railways:

- South Eastern Railway
- London & South-Western Railway
- Hull & Selby Railway
- Darlington & York Railway
- North Midland Railway
- Birmingham & Derby Railway
- Eastern Counties (and North-Eastern) Railway
- Eastern Union Railway
- Norfolk & Brandon Railway
- Wolverton to Peterborough and Stamford railway (of the London & North-Western)
- South Devon Railway
- Great Western Railway
- In progress on the London & North-Western Railway main lines

The South Eastern, South-Western, South Devon and Great Western arrangements were made by W F Cooke before 1846. It should be noted that with those exceptions the railway lines above were engineered by either Robert Stephenson or his business partner G P Bidder. Only parts of the various railway lines were wired at this time. Incidentally, alone amongst them, the South Eastern Railway worked its own public telegraphs in connection with the Electric company's circuits.

The Telegraph on the South Devon Railway at Dawlish, 1848
Note the atmospheric tubes between the rails and the air pump house, the telegraph posts on the right, and a single tall signal post on the left

Lines in the north-east of England, an area of important mines and industry, were just being negotiated during 1848. That left very large areas to the west and north-west that had no prospect of telegraphy even in 1850, and so open to competition. With the exception of Plymouth, Exeter, Bath, Oxford, Chatham, Preston and Brighton, all towns over one hundred thousand in population were in circuit. The first four were all on the lines of the Great Western Railway and its associates.

Developing its first underground circuits of 1847 in London to connect all of its long-lines, a network of small, 3-inch diameter socket-ended cast-iron pipes for lead-sheathed, tar-insulated copper wires was laid by the Company in 1848 from Founders' Court, Lothbury, under the street footpaths. These led to a new telegraph station in the General Post Office in St Martin's-le-Grand and to the Company's new office at 448 Strand; to the London Bridge station of the South Eastern Railway; to the new Waterloo Bridge station of the London & South-Western railway which replaced its old terminal at Nine Elms; and under Hyde Park to Paddington, terminus of the Great Western Railway. A cheaper earthenware pipe was laid beneath the Park. In 1848 connection from Founders' Court to the vital, profit-generating circuits to Birmingham and the north of England was made through its subterranean Paddington cable, then by overhead wires along the Great Western Railway and the short West London Railway at Kensal Green on the western outskirts of the metropolis to join the rails of the London & North-Western Railway at Willesden Junction.

Freeman Roe, a well-known and large-scale plumbing engineer used to laying iron piping, of 69 Strand, contracted to lay all the subterranean cables in London.

The telegraph office at the immense premises of the General Post Office in London was installed at official request to give the department notice of the arrivals and departures of foreign and colonial mail on ships at the ports of Dover, Southampton, Liverpool and Falmouth, and to give orders to post-masters and other postal officials throughout the country. It was also open for public message business.

Expanding the underground network further in 1849 the Company laid another 3-inch pipe from Lothbury under the footpaths to the Shoreditch station of the Eastern Counties Railway for the city of Norwich and agricultural East Anglia. This, apparently, contained the first telegraph cable insulated with the newly-discovered resin gutta-percha. Later in the same year the underground iron conduits and resin-insulated wires were extended to the Euston Square terminus station of the London & North-Western Railway, and in 1850 to the temporary Kings Cross station at Maiden Lane of the newly-opened Great Northern Railway. This latter connection was eventually to give a new, shorter route to the north-east of England, although the railway was violently opposed by the North-Western company.

Another direct point-to-point two-needle circuit was added to its busiest lines between London, Birmingham and Manchester, completed in January 1849, in addition to its existing one and its Bain line.

The Electric's first "submarine" circuit was laid in early 1849 when it extended its line at Kingston-upon-Hull in the north of England. An india-rubber insulated cable, manufactured by the short-lived firm of Billings & Company for the pioneering cable engineer Charles West, was laid through one of the docks, twenty feet beneath the water, connecting their new town office with the original circuit on the Hull & Selby Railway.

The Company found india-rubber short-lived as an insulator for its underground circuits. C V Walker, telegraph superintendant of the South Eastern Railway, had consulted the Company's W H Hatcher in regard to providing insulation for damp even wet locations and was recommended to J & T Forster, india-rubber and gutta-percha manufacturers, in the autumn of 1847. In response Thomas Forster proposed gutta-percha insulation and produced samples of covered wire for Walker, which he tested thoroughly underground for over a year and underwater in Folkestone Harbour for three months during 1847 and 1848. The railway adopted the cables for its long tunnels and for lines exposed to the dampest conditions. Forster patented his process and immediately sold the rights to the Electric Telegraph Company, who were to use his gutta-percha insulated copper wires on underground circuits in London, Glasgow and Newcastle from November 1848.

On January 9, 1849, the South Eastern Railway Company laid two miles of the Company's patent insulated cable into the waters of the English Channel from Folkestone as an experiment, with a definite view to a permanent electrical link to France. Messages were successfully sent from a steamer offshore to London Bridge, 73 miles under water and by the side of the rails. W H Hatcher, the Company's engineer, was there to observe.

The Company also sold the "Electric Telegraph Company's Wire", with a gutta-percha insulated thin copper core, to electrical and medical instrument–makers through its independent agent George Trimbey, of 39 Queen Street, Cheapside, in the early 1850s.

J & T Forster's wire-covering process owned by the Company was not precise enough for reliable insulation and was quickly rendered obsolete by the patent of Charles Hancock worked by the Gutta Percha Company whose cable cores were eventually to bind the continents of the world together.

On June 1, 1849 the Company, in an attempt to introduce the telegraph to the larger Irish railway companies, opened a short demonstration line with two-needle instruments in Dublin. This extended a mile or so from the Kingsbridge terminus to the suburb of Inchicore on the Great Southern & Western Railway. The financial situation was such that none could afford its licenses. It was to be almost ten years before the Company achieved even a limited presence in Ireland.

As with the general economy, it was a difficult period for the Electric Telegraph Company between 1848 and 1850. It was making large investments in lines and property; it expanded quickly in London, too quickly. With receipts of just £100 per week it had to borrow money in the short-term from the railway contractor, Morton Peto, to complete its largest construction work, the Central Telegraph Station, as well as generally cutting costs and letting-go many of its newly-trained clerk-operators and mechanics during March 1848, said in the press to total 150 individuals, including its secretary and other senior officials and engineers, 5% of its workforce.

The Electric was compelled by its financial circumstances to reduce the number of its sub-contractors in 1848. William Reid, one of Wheatstone's instrument makers and an investor in the Company, had a maintenance contract for all of its lines. This was terminated and Reid sued for compensation. He was offered a compromise payment and accepted. Reid went on to become one of the largest telegraph contractors in the country, but he expressed ill-feeling over this 'betrayal' for the rest of his life.

The Company was, unsurprisingly, very quiet in the public press in 1848 and 1849. It released hardly any information and ran no advertising in London.

The Electric Telegraph Company's West-End Office 1849
No 448 West Strand, Charing Cross

But by 1849 the company possessed six public offices in London: - the Central Telegraph Station at Founders' Court, Lothbury; 14 Seymour Street, Euston Square (adjacent to the London & North-Western railway terminus); in the Eastern Counties' terminus, Shoreditch; in the South-Western terminus, Waterloo Bridge; in the Great Western terminus, Paddington, and at the Great Western's West End ticket office, 448 Strand. The company had by then disposed of both of its former premises in the Strand.

Its other principal offices were:
Birmingham, 73 Canal Street
Cambridge, Railway Station
Colchester, Railway Station
Derby, Railway Station
Edinburgh, 68 Princes Street
Glasgow, Exchange Square
Gloucester, Railway Station
Hull, Bowling Alley lane
Leeds, Commercial Buildings
Lincoln, Railway Station
Liverpool, Exchange Buildings
Manchester, The Arcade
Newcastle, Exchange
Norwich, Railway Station
Nottingham, Railway Station
Rugby, Railway Station
Sheffield, Railway Station
Southampton, Railway Station
Stamford, Railway Station
Yarmouth, Railway Station
York, Railway Station

According to the Company in 1849 "public messages could be transmitted in a few minutes, and answers obtained, to and from the following (208) places":

Acklington, Alne, Alnwick, Ambergate, Apperby, Ardleigh, Ashchurch, Attleborough, Audley End, Aycliffe, Ayton, Barking Road, Barnsley, Beeston, Belford, Belmont, Belper, Bentley, Berwick-on-Tweed, Beverley, Birmingham, Bishopstoke, Blackwall, Bradford, Braintree, Brandon, Brentwood, Bridlington, Brick Lane, Brockley Whins, Brockenhurst, Bromsgrove, Brough, Broxbourne, Burton-on-Trent, Calverley, Cambridge, Castleford, Chelmsford, Cheltenham, Chesterford, Chesterfield, Chittisham, Church Fenton, Clay Cross, Cockburnspath, Colchester, Colwick, Countess Thorpe, Cowton, Crewe, Croft, Darlington, Derby, Dereham, Dorchester, Duffield, Droitwich, Dunbar, Durham, Eastrea, Eckington, Edinburgh, Edmonton, Elsenham, Ely, Fenci Houses, Ferry Hill, Flaxton, Gateshead, Glasgow, Gloucester, Gosport, Granton, Grantshouse, Haddington, Halifax, Harecastle, Hurling, Road, Harlow, Helpstone, Hertford, Hessle, Hull, Ilford, Ingatestone, Ipswich, Kegworth, Keighley, Kildwick, Kelveden, Kirkstall, Lakenheath, Leamside, Leeds, Leicester, Leith, Lesbury, Lincoln, Linlithgow, Linton, Liverpool, London, Longeaton, Longniddery, Longport, Long Stanton, Longton, Loughborough, Lowestoffe, Maldon, Malton, Manchester, Manea, Manningtree, March, Masbro', Melton, Mildenhall, Mile End, Milford, Morpeth, Newark, Newcastle, Newley, Newport, Normanton, Northallerton, Norton Bridge, Norwich, Nottingham, Oakinshaw, Oakington,

Otterington, Peterborough, Ponders End, Poole, Portsmouth, Rillington, Raskelf, Resten, Richmond, Ringwood, Rochdale, Romford, Rotherham, Roydon, Royston, Rugby, Sawbridgeworth, Sawley, Scarborough, Selby, Sessay, Sheffield, Shelford, Shipley, Skipton, Slough, Southampton, South Shields, Spetchley, Stamford, Stanstead, Staveley, St Ives, Stoke on Trent, Stone, Stortford, Stratford, Stratford Road, Sunderland, Swinton, Syston, Tamworth, Thetford, Thirsk, Todmorden, Tottenham, Tranent, Trentham, Tring, Tweedmouth, Ullesthorpe, Uttoxeter, Wakefield, Waltham, Ware, Wareham, Washington, Waterbeach, Waterloo Station, Watford, Whitacre, Whittlesea, Whittlesford, Willington, Wimbourne, Winchburgh, Wingfield, Wisbeach, Witham, Wolverhampton, Wolverton, Woolwich, Worcester, Wymondham and York.

What is interesting about this list are those cities and towns yet to be put in circuit.

From May 1849 the Company loudly announced in the press that the “average time of transmission was five minutes for all distances”. This was, of course, from station to station, and did not include delivery. It was, however, a great achievement, and more importantly, quite accurate.

The Electric tested Jacob Brett's patent type-printing instrument on its circuit along the Eastern Counties railway from Shoreditch in London to Norfolk in East Anglia during December 1849. In this the operator “plays on keys, each key being pressed down prints a capital letter on long, narrow strips of paper”. The Company found the apparatus unreliable and took no further interest. However, the type-printer was to re-appear three years later in the hands of a competitor.

The tipping point as far as the business was concerned had been reached, the Company had developed to such an extent that in 1850 it had a gross profit of £10,075 on revenues of £43,524.

In 1850 the Great Western Railway transferred the lease of the impressive corner site at 448 Strand, at Adelaide Street, in the area known as Charing Cross, designed by Royal architect, John Nash, to the telegraph company, which premises became its prestige West End office. It was notable for the two cupola-topped towers at the Charing Cross corner, known as the “pepper pots”. It was open for public business day-and-night.

It also took over one of the four stone lodges at the North-Western railway's terminus, firmly under the protection of the great arch at Euston Square.

The Euston Square Station
of the mighty London & North Western Railway Company 1851
The telegraph office is in the lodge to the immediate left of the portico
The other lodges held an Inquiry Office, a Post Office and
a Waiting Room

On July 13, 1850 the Electric announced that its principal stations in London, at Founders' Court and in the Strand, would be open on Sundays. This was a little disingenuous as virtually all of its provincial offices, located at railway stations, were closed on the Sabbath. Also remaining closed were the telegraphs on the railways at Euston Square and Waterloo Bridge in London.

The original long line of 1844 on the London & South-Western Railway was revealed

on February 13, 1850, to be open for public traffic only between Waterloo Bridge in London and Southampton, not yet to any of the intermediate towns, such as Basingstoke.

Francis Whishaw, a civil engineer, and secretary of the prestigious Royal Society of Arts & Sciences in London from 1843 to 1845, and a manager for the Company between 1845 and 1848 wrote an account of the electric telegraph in November 1849 for the *Artisan* magazine:

"The construction of the telegraphs, chiefly used in England, may be thus described:- Along the sides of the various railways (for by this system it is wise to have the telegraph wires protected, as far as possible, by a constant supervision) wooden vertical posts of fir timber are ranged at convenient distances. Each post is furnished with an insulator of earthenware, through which the wires are drawn, to prevent their connexion with the wooden posts. The wires are of stout galvanized iron, which are carried from one end of the railway to the other, except in passing through tunnels, or under bridges. In such cases, the insulators are attached to the brickwork; and thus the wires are prevented from being in contact with the brickwork. Each post is furnished with a lightning conductor, and is also capped with a wooden roof, with dripping eaves to throw the rain water from the wires."

"At each end of the telegraphs, the line wire is connected with an earth battery, consisting of a large plate of zinc or copper, buried in the earth-the object of which is to avoid the necessity of a return wire, which in the first telegraphs in England was made use of."

"At the various stations, one or more of Cooke and Wheatstone's needle instruments are set up, being connected with the line wires and batteries by wires of smaller size, generally covered with silk or cotton, which is easily destroyed by the alterations of weather, and, therefore, is objectionable. Each telegraph on this plan has two wires. The batteries used are of the most simple form, consisting of a trough, divided into any number of cells, according to the power required. Alternate plates of zinc and copper are connected throughout the pile, which dip into sand, saturated with dilute sulphuric acid - the use of the sand being to prevent waste of the acid in the battery, when required to be sent from one station to another ready charged. The signals are given by means of the needles, placed in front of a dial, on which are written or engraved, the letters of the alphabet, being moved either to the right or to the left. Each needle in front of the dial is placed on the same axis as a magnetic needle behind the dial, which latter is suspended freely in a space, surrounded by a coil of wire, through which coil, when the current is transmitted either in one direction or the other, the needle is deflected either to the right hand or to the left, as may be desired; so that, by a certain number of movements of each needle, and by the combination of the movements of both, every letter of the alphabet, or any numeral, is given. As many as thirty letters, under ordinary circumstances, are thus transmitted in a minute; but by expert manipulators many more. Although the requisite movements are easily learned, yet it requires many weeks for a telegraphist to work the needle instrument sufficiently well to be entrusted with a communication of any value, whether for railway or commercial purposes; moreover, it is requisite that the two persons communicating with each other should be equally advanced in the required manipulations. Some of the boys employed by the Electric Telegraph Company, have acquired wonderful rapidity in the transmission of messages; while I have known many persons give up the occupation altogether, although having no other employment to resort to. In case of a telegraphist attending the needle instrument being suddenly disabled by illness or otherwise, great inconvenience must be experienced, by reason of no one being at hand to take his place; whereas by other instruments, as that of Siemen's, &c., which can be worked by man, woman, or child, at five minutes' notice, this inconvenience is done away with."

"The exposure of the wires to atmospheric influence, to storms of snow, as lately experienced on the South Eastern Railway, to the destructive effects of trains running off the way, and to the destruction of the wires by malicious persons (rewards for whose apprehension have frequently been offered), are all fatal objections to the present English system ever becoming universal."

"Moreover, the expense to railway companies and others is a sad drawback to the further extension of this system in Great Britain and Ireland - for the railways of which alone an extension of at least 2,000 miles is still required. The average charge for an electric telegraph, with two wires, as hitherto furnished to the various railway companies in England, may be stated at not less than £150 per mile; added to which

an annual sum must be calculated on for keeping it in order, and reinstating, when necessary, the wooden posts, &c."

"The charge for transmission of communications by the Electric Telegraph Company's telegraphs in England is at the rate of one penny (1d) per mile for the first fifty miles, and one farthing (¼d) per mile for any distance beyond one hundred miles. The South Eastern Railway Company's charges for telegraphic communications are even higher than those of the Electric Telegraph Company. Thus twenty words, transmitted eighty-eight miles, is charged the large sum of 11s (132d); whereas the same length of communication for the distance of 100 miles is only charged 6s 3d (75d) by the Electric Telegraph Company."

The Telegraph Station at Tonbridge 1850
The main electrical office of the South Eastern Railway; the instrument on the wall bracket in the middle connects with the superintendent's house

The Company's retrenchment in the late 1840s, when it was borrowing money short-term to continue and was laying-off clerks, saw it abandon the manufacture of Bain's electric clocks. Bain bought the patents back and started his own clock business in 1852.

The Electric Telegraph Company went before the Judicial Committee of the Privy Council in London, then the highest legal authority in Britain, during 1851 in an unsuccessful attempt to extend the life of the initial Cooke & Wheatstone master patent that it owned and which was soon to expire. It did so on the grounds that there had not been adequate time to obtain a reasonable profit since it had acquired the rights. In the course of this process the books of the Company were made up and balanced from the introduction of the electric telegraph to 31st December, 1850:-

The receipts from railway companies for licences for the use of the Company's patents were £122,285 13s 2d; the receipts from the erection of telegraphs for railways, £40,747 4s 2d, the receipts from maintenance and sundries, £7,301 13s 1d; totalling £170,334 10s 5d in income. From this were deducted charges, including law and parliamentary expenses, of £34,319 6s 7d leaving the sum of these capital entries at £136,015 3s 10d.

The Company charged their capital account with £33,603 10s 8d as the value of the thirty-four patents of all descriptions employed in their telegraphs. The book value of these patents was nominal as they had been bought with shares.

Regarding the working of its public telegraphs up to the end of December 1850; these earned, during the first five years, a total gross sum of £103,444 7s 11d with expenses amounting to £83,265 6s 11d showing a surplus of £20,179 1s 0d. Earnings only accumulated in the last three years of the period. This was the total net return

upon a paid-up capital of £104,229 17s. 8d.

There had been no annual dividend paid on the Company's shares for the years 1846 and 1847, then for 1848 and 1849 it was just 2%; but after five years the corner had been turned for the business and two decades of real prosperity commenced.

In 1850 the Electric Telegraph Company possessed 2,215 miles of line, 13,906 miles of wire and 257 stations; carrying 64,734 messages. It then was using 482 two-needle and 86 single-needle instruments. Besides a dividend of 4 per cent on its paid-up capital of £300,000 in that year the company's shareholders, said to total just twenty-five individuals, received a handsome bonus of £15 per £100 share. The Company was to continue to award bonuses to its loyal proprietors, especially after the state imposed a dividend limit in 1863.

The Electric Telegraph Company
Four Years of Growth

	Line	Index	Wire	Index
Jul 1851	1,965	100	7,900	100
Jan 1852	2,122	108	10,650	135
Jul 1852	2,502	127	12,500	159
Jan 1853	3,709	188	19,560	247
Jul 1853	4,008	204	20,800	263
Jan 1854	4,409	224	24,340	308
Jul 1854	4,652	230	25,233	320

The above in English statute miles

	Offices	Index	Staff	Index
Jul 1851	224	100	485	100
Jan 1852	224	100	485	100
Jul 1852	201	90	565	116
Jan 1853	207	92	695	143
Jul 1853	254	113	715	147
Jan 1854	338	151	954	197
Jul 1854	374	161	1,152	236

	Income	Index	Expense	Index
Jul 1851	25,529	100	15,370	100
Jan 1852	24,336	95	15,370	100
Jul 1852	27,437	107	17,259	113
Jan 1853	40,087	157	26,241	171
Jul 1853	47,265	185	34,000	221
Jan 1854	56,919	223	38,000	247
Jul 1854	61,215	240	45,091	291

The above in pounds (£) sterling

	Messages	Index
Jan 1850	29,245	100
Jul 1850	37,389	128
Jan 1851	47,259	161
Jul 1851	53,957	181
Jan 1852	87,150	291
Jul 1852	127,987	437
Jan 1853	138,060	470
Jul 1853	212,440	726
Jan 1854	235,867	

Statistics from 'Der Telegraph als Verkehrsmittel', Dr Karl Knies, Freiburg, 1857

The Company's engineer, Edwin Clark, waxed lyrical at the celebration of the opening of Robert Stephenson's great Britannia Bridge for the Chester & Holyhead Railway across the Menai Straits, held at Bangor on August 27, 1851. In response to the toast "The Electric Telegraph Company" he declaimed:

"The electric telegraph is an appropriate toast. It is indeed the immediate child and offspring of railway enterprise, and another characteristic of the march of civilisation. While, on the one hand, our material wants are transmitted with the speed of a hurricane, a slender wire conveys our thoughts and our sympathies with a velocity equalled only by light itself – our doings this day might ere now have been recorded throughout the land; yea, even a simultaneous cheer might greet every toast from every city in the kingdom. Thus in our onward march time and space become more and more annihilated, and a goal is approached when even a few short years of life may rival an eternity. A just tribute of admiration has been paid to those enterprising men who have thus placed at your disposal such engines of social improvement. May the railway and the telegraph go hand-in-hand until the whole human race consists of one brotherhood, united in action as in mind!"

Liverpool had been connected by telegraph with Holyhead, the ferry port for Dublin in Ireland, by way of Chester, Conway and Bangor, since June 23, 1851, alongside of the new railway. The Electric company appointed W H Smith & Son, news agents and books sellers, 1 Eden Quay, Dublin, as its Agent to receive and forward Irish messages for England by steamer to Holyhead on July 22, 1851.

The ambitious news-agent William Henry Smith, who made his fortune with bookstalls on railway stations, appreciated the value of the electric telegraph. He became a large shareholder in the Company and was to join its Board of Directors. He also became a Member of Parliament.

The Patent Expires

When the Cooke & Wheatstone master patent expired, the Electric Telegraph Company in negotiations after 1851 had to amend its business model to create a mutual relationship with the railway connection. Henceforth each railway company granted a wayleave to the Company to lay wire alongside of its lines of rail for a nominal sum, or even free-of-charge, in return obtaining free use of parallel wires for it own use, that is, of course, other than for public messages, and to have those wires maintained.

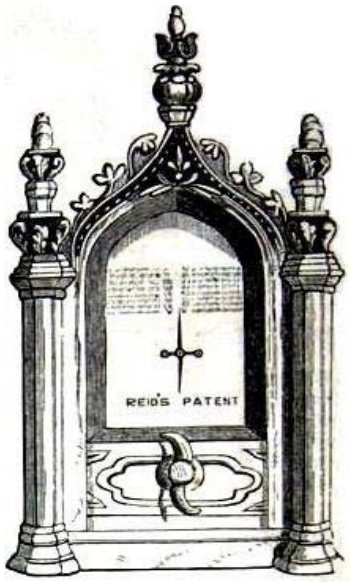
It was stated in 1851 that the London & North-Western Railway had previously paid the Electric Telegraph Company £1,000 annually in licences and for its services in maintaining the wires. In addition its employees were instructed to allow the telegraph company access to its rails for repairing its circuits, even going so far as sending an extra engine, without charge, when there was not a regular train available; and they had to immediately report anything found to be out of order.

The new model allowed the Great Northern Railway to pay £5 a mile per year for its own long circuits, and £2 a mile for branches, on six months notice in May 1852. The Bristol & Exeter Railway was charged £6 per mile per annum for five years, with a £40 terminal commutation at the end of the contract. In the north-west, the Lancaster & Carlisle Railway paid the Electric £5 5s per mile a year after the newly-formed British Telegraph Company asked for £6. The charges were for wires for their own use.

In January 1851 the Company had £600,000 in capital subscribed for of which 50% was paid on 6,000 shares of £100. Going to Parliament once again for approval and authority in that year the original 6,000 shares were called-in and re-issued as two shares each of £25 all paid. Its borrowing power of £200,000 at that time was fixed at one third of the nominal capital with one half paid-up. These structural changes were intended to make the Company's stock more attractive to smaller investors as competitive concerns were just about to enter the London capital market.

Unlike its new competition, the Electric eschewed preference shares and other derivatives, and rarely, after its formative years, acquired bond debt.

On January 15, 1851, the Company opened a new line along the London, Brighton & South Coast Railway. It initially ran from the London Bridge terminus to Brighton station, but was extended shortly to the Royal York Hotel in the centre of the Channel resort.



William Reid's Single Needle Telegraph
A show-piece for the Great Exhibition at Crystal Palace, 1851
An adaptation of Cooke & Wheatstone's apparatus

The Great Exhibition 1851
When the Great Exhibition opened at the Crystal Palace in London's Hyde Park during 1851 the Electric Telegraph Company demonstrated a system for communication with various parts of the exhibition building; exhibiting as well single-, double-needle and Bain instruments, batteries, bells, magneto-electric machines, methods of insulation, maps of telegraphs in operation, and maps showing the daily changes in the nations weather. It arranged telegraph stations in the many galleries and at each of the entrances in connection with a main office at the south entrance, where a two-needle telegraph was in communication with all of the public offices in the country, and where it showed its instruments. The indoor circuits had a network of small single-needle telegraphs, used principally for summoning the carriages of visitors or for communicating information to the exhibition's adjacent police station, although capable of transmitting all manner of information.

The Most Wonderful Thing

"We went to the Exhibition and had the electric telegraph show
explained and demonstrated before us. It is the most wonderful thing
and the boy who works it does so with the greatest of ease and rapidity. Messages
were sent out to Manchester, Edinburgh, &c.,
and answers received in a few seconds – truly marvellous!"

Queen Victoria, in her Diary, July 9, 1851

The Electric Telegraph Company had a large display at the South Entrance of the Exhibition Building demonstrating the firm's investment in the industry. In pride of place were Cooke & Wheatstone's patent apparatus; the famous five-needle telegraph used at Euston Square in 1837, the first two-needle instrument, two common two-needle telegraphs, a single-needle telegraph, a portable single-needle telegraph and a detector or portable galvanometer. There were side stands showing eight different patterns of electro-magnetic alarm (bells) in several sizes; eight dial telegraphs ranging through the Wheatstone 1840 galvanic prototype to his latest magneto version, including his electric register or counting machine and Nott & Gamble's apparatus. There were three types of W H Hatcher's double index dial telegraph receivers used on railways for train control; four type-printing telegraphs, by Wheatstone and by Barlow & Forster; two Bain chemical printers and tape punching accessories; two magneto-electric machines, one for bells and one for working the double index dial; two induction machines for the double index dial; and five galvanometers; as well as a set of pole insulators of four sorts.

The Queen was most impressed when she visited the Exhibition for the first time on July 9, one several visits she and her family made. The Company's display was the first Her Majesty called at, as it was by the entrance; the monarch was received democratically by Edwin Clark, the Company's engineer, and W H Hatcher, its former secretary, rather than by any of the directors, which suggests that the royal visit, like so many others, was impromptu. The Queen and Prince Albert had previously turned up unannounced at grim and grubby Wapping on July 26, 1843 to walk together through the newly-opened Thames Tunnel to Rotherhithe, but then there was just enough time to assemble some of the tunnel company's directors to "do the honours".

The Great Exhibition Season Ticket of Jacob Brett,
one of the many competitors to the Electric Telegraph Company
that appeared after the master patent expired in 1851

Ominously for the Company in the year that the patent expired there were fifteen other separate exhibits of telegraphic apparatus in the Great Exhibition; with W S Alexander, Thomas Allan, Frederick Bakewell, Alexander Bain, Jacob and John Watkins Brett, the British Electric Telegraph Company, George Edward Dering, Charles French, William Thomas Henley, Archibald McNair, Henry Mapple, William Reid, Charles Vincent Walker and Francis Whishaw in the British stands, and Siemens & Halske in the Prussian stands. Virtually all of these names are to reappear later in this work.

In 1851 the Company introduced for sale at its station at the Great Exhibition its *Franked Message Paper*, a pre-paid message form on pink stock, which allowed twenty words to be sent to stations within a circuit of fifty miles for 1s 0d. It could be completed and handed in at any of its offices in London.

The Electric Telegraph arrives in Parliament
The Nobility, Judges and Bishops are bemused!

The Company provided the Royal Household at Buckingham Palace with a private circuit with two-needle instruments from Founders' Court in 1851; a confidential telegraph clerk was also recruited to accompany the Queen on her travels. The

Commissioner of Police for the Metropolis of London immediately followed his sovereign's initiative with a private wire of his own: a confidential circuit from New Scotland Yard, Whitehall, to the Company's station at Charing Cross. A telegraph was installed at Osborne House on the Isle of Wight, the Queen's summer residence, in October 1852, necessitating a special submarine cable. It was to be an additional year before Parliament caught up with the Queen in electric communication.

The Telegraph and the Railways in 1852
Compiled by C V Walker

Just before competitive concerns became fully operational the Electric Telegraph Company had these lines in circuit, according to an unofficial survey:

Company	Miles of Line	Instruments
Edinburgh & Glasgow Railway	80½	16
Edinburgh & Granton Railway	5½	8
North British Railway	66	14
York, Newcastle & Berwick Railway	193	48
York & North Midland Railway	164	23
Lancashire & Yorkshire Railway	96¾	31
Midland Railway	353¾	76
London & North-Western Railway	236½	37
South Devon Railway	4	2
Newmarket Railway	17	4
Eastern Union Railway	19½	10
London & South-Western Railway	169	20
Eastern Counties Railway	256½	88
Norfolk Railway	104¼	30
North Staffordshire Railway	121	22
South Staffordshire Railway	11¼	4
Northampton & Peterborough Railway	57½	12
London & Croydon Railway	8	4
Great Western Railway	19	2
Manchester & Sheffield Railway	16½	8
London & Blackwall Railway	3½	4
Various mineral railways	6¾	8
Streets of London	?	10
South Eastern Railway	182	77

This list totals 2,192 miles of line and 558 instruments and was taken from figures published in 1852 by Charles Walker, superintendent of telegraphs for the South Eastern Railway Company, running from London to Dover. This railway operated its own public telegraphs in circuit with the Electric company using Cooke & Wheatstone's two-needle system.

Introducing his copying telegraph in 1851 Frederick Bakewell proposed that anyone might write a message on a 'page' of tinfoil with a common pen dipped in coloured varnish and send it to a telegraph station for transmission; a fair facsimile of the writing, or a drawing, being received at the distant station on electro-chemically sensitive paper. As well as avoiding the need for transcription, and intrusion of errors, by intervening clerks, it was capable of receiving "secret" messages on paper that could only be revealed chemically.

The Electric Telegraph Company had allowed Bakewell to use their short isolated line between Paddington and Slough to develop his first model of the copying telegraph in October 1848.

Bakewell's perfected apparatus, which used a small synchronous rotating drum and a longitudinally moving electrical 'feeler', was eventually worked experimentally on April 2, 1851 on the Company's newly-completed fifty-two mile circuit between Founders' Court and Brighton on the south coast of England, but it was not adopted for public use.

The copying telegraph was featured in a display at the Great Exhibition at the Crystal Palace. It was so well-received there that on October 20, 1851 Bakewell advertised in the 'Times' for support for a new telegraph company to work his apparatus, or "to

introduce the system to existing lines". He modestly claimed that his machine would "supersede the Post Office" in the delivery of letters.

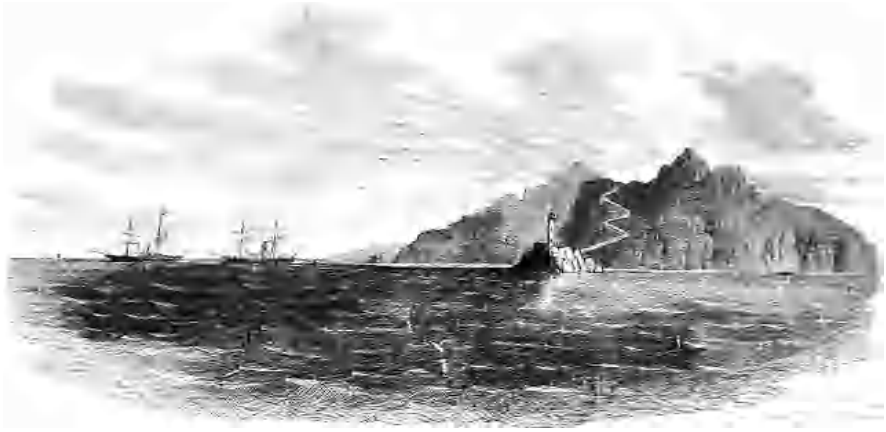
At the annual meeting of August 15, 1851, the directors reported that circuits on the Chester & Holyhead, London & Brighton, and Buckinghamshire Railway had opened in the previous six months. New works were in hand or were about to be commenced on the Great Western, Bristol & Exeter, Great Northern (over the whole system) and Manchester, Sheffield & Lincolnshire Railways, totalling 970 miles of new line. These were to be made under a new regime of rental rather than purchase by the railway; the Bristol & Exeter Railway, for example, paying £6 a mile.

The Company's capital account to June 30, 1851 had received £411,111 and expended £386,502. Revenue for the half-year was £25,529, expenditure £14,762.

A new era of competition was about open in 1851. With the finishing of the first competitive telegraph line in prospect, between Liverpool and Manchester, on January 1, 1852 the Company introduced a spoiling 1s 0d for twenty word rate from its two offices in Liverpool, at 33 Dale Street and Lime Street railway station, to its three offices in Manchester, at Ducie Buildings, Victoria railway station and London Road railway station.

Relations between the Electric company and the Great Western Railway, at the time the second largest business concern in the country, were strained by its close co-operation with the London & North-Western Railway. Between 1845 and 1852 it had only the original circuit between London and Slough and a poorly maintained signal circuit on the long Box Tunnel. Connection to Bristol – the western terminal of the railway – had to be made very indirectly in a long geographical 'elbow' to the north by way of Birmingham and Gloucester alongside of the North-Western railway and the rails of its allies. The Great Western and the Electric companies belatedly came to terms during 1851 and a direct circuit finished between London and Bristol onward west from Slough on March 5, 1852.

This important agreement rapidly opened the whole West Country of England to the telegraph alongside of the Great Western's allied lines, the Bristol & Exeter Railway, the South Devon Railway (a Cooke & Wheatstone licensee), the South Wales Railway, and the Wilts, Somerset & Weymouth Railway. The new direct telegraph was opened to the public in Bristol on April 13, 1852 and Exeter during August 1852, where it connected with the old line on the South Devon, putting Plymouth in the far west in national circuit on August 14, 1852. On October 15, 1852 the Electric opened circuits for the Admiralty from Exeter to Plymouth, Devonport navy yard and Stonehouse, with a connection to the Port Admiral's house. The whole industrial coast of South Wales was connected by the year end of 1852.



The first attempt to lay the Holyhead to Howth cable 1852
Steamers *Prospero* and *Britannia* leaving Holyhead on June 1, 1852
to connect Anglesey with Ireland by telegraph
The cable was laid by R S Newall for the Irish Sub-Marine Telegraph Company

Also on October 15, 1852, the amalgamation of the Electric and the Irish Submarine company, with rights for the Holyhead to Howth cable was approved.

Eight wires were erected from London to Swindon where the circuits divided, four following the main line to Bristol and Cornwall, all on poles on the south side of the rails, the remaining four diverging along the branch for Gloucester and South Wales.

To connect these new lines with Founders' Court a new underground cable was laid to Charing Cross, then down Whitehall and Birdcage Walk, past Buckingham Palace to Albert Gate on Knightsbridge, and under Kensington Park Gardens and Hyde Park, across the bridge over the Serpentine, to access Paddington railway station in November 1852. It replaced the existing two wire circuit with one of sixteen galvanised brass wires insulated with gutta-percha bound with webbing and covered in tar forming an "open rope". These were protected in the Company's common three-inch diameter socket-ended cast-iron pipe.

In addition to advances in the west, on the eastern side of the country, the Electric's new relationship with the Great Northern Railway resulted in a 160 mile long-line with six wires from London to Doncaster. It was constructed for the Company by William Reid, Cooke & Wheatstone's original telegraph engineer and contractor, and opened on March 10, 1852, providing an alternative telegraph route to Scotland to that alongside of the London & North-Western Railway.

Click here for a Map of the Electric Telegraph Company's System in 1852

(Click on Previous Page to resume)

The Edinburgh & Northern Railway between Burntisland and Tayport in Scotland, the Preston & Wyre between Preston and Fleetwood, the Liverpool, Crosby & Southport, both in Lancashire, the Eastern Union between Colchester and Ipswich, and the grandly-titled Manchester, Buxton, Matlock & Midlands that had a short line from Rowsley to Ambergate, all used telegraphs built under license or under lease from the Electric company in 1852 but not worked by it. These odd lines were either isolated from the rest of the national network geographically or because they were leased to other railway companies. In 1852 the system of the South Eastern Railway Company from London to Dover and to Reading, including the North Kent line between London Bridge and Rochester in Kent, as well as the Submarine Telegraph Company between Dover and Calais and Ostend, remained independent of the Company but worked Cooke & Wheatstone's apparatus.

The special circuits to the Crystal Palace in Hyde Park were put to good use after the Great Exhibition closed in late 1851. They were connected to a new station at 1 Parkside on Knightsbridge, opposite the Palace site, convenient for the elegant Grosvenor estate, Belgravia and Brompton, and for the betting market at Tattersall's; to a new subterranean cable under Hyde Park to Paddington; and to a private wire to the Chairman's house in Lowndes Square in 1852!

According to its competition the Electric Telegraph Company's connections were such that it was able to enlist the support of the Railway Clearing House in its parliamentary battles preventing or limiting the powers of other telegraphs during 1851 and 1852. The Clearing House, created on January 2, 1842, ostensibly had the role of balancing inter-company accounts in passenger and goods traffic. It became so essential to the companies' business that it was empowered by its own Act of Parliament in June 1850. It soon also became the representative body for all of the railway companies in Britain and Ireland. In September 1851 it appointed a "parliamentary agent to watch, at the expense of the associated companies, any bills other than railway bills, which may be brought into Parliament in order that no clause injurious to the interests of railway companies may be passed unnoticed." Thomas Coates, a solicitor, was appointed to the post; to be, in modern terms, their 'lobbyist', and his first reports were on the telegraph bills then in progress.

The Clearing House was formed at the instance of the London & North-Western Railway and had its premises on land leased from the railway company, adjacent to its station at Euston Square in London.

Even if short-lived, the Electric's influence through the Railway Clearing House in 1851 and 1852 was such that competitive telegraph companies were effectively excluded from all the railway routes into London, being confined to provincial lines.

The Telegraph Station at Charing Cross in 1852
The Time Ball on the roof, Bain's Clock on the pavement standard

The Passage of Time
From its creation the Electric company had installed handsome, long-cased electrically-driven Bain regulator clocks in all of its public offices, which, in 1846, on the initiative of Francis Whishaw, then managing the message department, were corrected to the minute daily by a time-signal from its head office.

Above the Royal Observatory at Greenwich was a “time ball”, regulated by a precise solar clock, the descent of which had been used since 1833 by mariners on the river Thames leaving the Port of London to set their chronometers for ocean navigation.

During 1851 the Astronomer-Royal installed an electric chronometer to the design of Charles Shepherd, a clockmaker of 53 Leadenhall Street, City, at the Greenwich Observatory at a cost of £70. This, too, was delicately adjusted as needed from readings off the solar clock. The electric chronometer was placed in circuit with four other clocks in the Observatory and, during July 1852, in co-operation with the South Eastern Railway, with another on display at the railway's terminal station at London Bridge, ten miles away, so that each beat simultaneously with each other. C V Walker, the railway company's telegraphic superintendent, took the first electric time signal from Greenwich at 4pm on August 5, 1852 at the London Bridge terminus and it was simultaneously received at its Dover station. The experiments continued daily over the next few weeks, one time signal being extended automatically to all the railway stations on the line at least once in each day.

The existing large public clock at London Bridge made by John Carter, chronometer maker to the Royal Navy, of 61 Cornhill, City and 207 Tooley Street, Southwark, next to the terminus, was adapted with an electric check to take the precise time signal.

It was intended that this “time circuit” be extended from London Bridge to the Electric Telegraph Company's station at Founders' Court in July 1852 where its beat would regulate the Company's Bain electric clocks and hence the daily time-signal to all of its offices.

The Electric Telegraph Company's "time works" also involved the laying of new underground circuits and the installation of a six-foot diameter *electric time-ball* constructed of red-painted zinc on a twenty-foot post on the roof of its prominent Strand premises at Charing Cross in the West End of London. A rod in the post connected with a piston in a cast-iron cylinder at the base which regulated its descent by air-pressure. It was released electrically through a dedicated circuit in concert with the original time-ball at Greenwich Observatory so that both dropped at exactly one o'clock each day, from August 28, 1852. The electric time-ball allowed the public in the Strand and its environs to set their clocks and watches with equal precision.

The "Public Face" of Charles Shepherd's electric clock at Greenwich in 1870
Installed in 1851 it set the country's mean time by connecting with the circuits of the telegraph companies.
The works were within the Observatory, this shows the original external twenty-four hour "slave" dial.

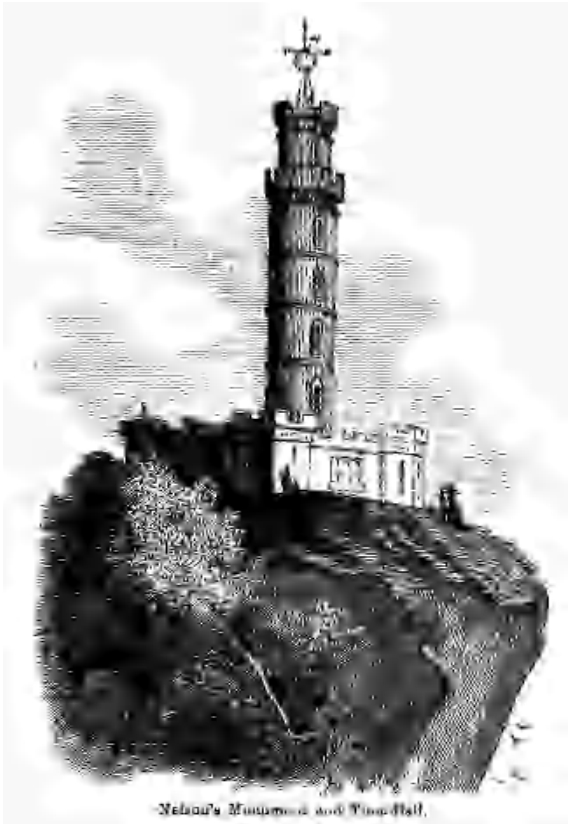
The time signal from Shepherd's clock at Greenwich was used to adjust the electric regulator clock in the Strand office which controlled, on sub-circuits, the electric time ball on its roof and a very large gas-illuminated Bain electric clock with four dials on a tall cast-iron pillar on the pavement outside. In February 1855 another time circuit was introduced along the South Eastern railway from Greenwich for the Admiralty to work an electric time-ball at the Royal Navy Dockyard at Deal, on the Kent coast.

This had immediate effect on the specification of the proposed giant new clock to be installed in the tower above the Houses of Parliament. It was now to be regulated "on the principle recommended by Mr Wheatstone, at least as often as once in a minute, for the purpose of producing a magneto-electric current, which will regulate other clocks in the New Palace."

The clock's regulation, through the wires of the Electric Telegraph Company, was described by Edmund Beckett Denison in 'The Times' of August 11th, 1865: "I may as well correct a mistake, which I often have to correct privately about the great clock. In consequence of the ambiguous language of another report of the Astronomer Royal [George Airy], some people imagine that the clock is controlled by electric connection with Greenwich Observatory. It contains no machinery whatever for that purpose. It reports its own time to Greenwich by electrical connection, and the clockmaker who takes care of it receives Greenwich time by electricity, and sets the clock right whenever its error becomes sensible, which seldom has to be done more than once a month. Mr Airy's last report upon the rate was 'that it may be relied on (that is, the first blow of the hour) within less than one second a week;' which is seven times greater accuracy than was required in the original conditions."

The Royal Observatory eventually had telegraphic connections for transmitting time signals with the Electric company at its Greenwich station, with the Magnetic company through its Deptford office and with the London District company at their office in Greenwich town. These were used for time signals to all of their respective public stations and offices to set regulator clocks that passers-by might adjust their watches.

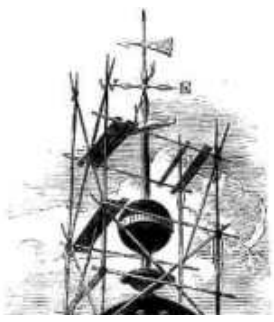
With this public success the Electric immediately added an electric time-ball to its main office in the great sea-port of Liverpool in 1854; another was subsequently put up by John French, a chronometer maker, on the roof of his premises at 80 Cornhill in the centre of London, with a private time circuit from Founders' Court. In Liverpool there was also a very large municipal electrically-controlled clock with six faces on the Victoria Tower, said to be the largest existing in 1859, in circuit with the Liverpool Observatory. In Edinburgh by 1855 the city authorities had erected an electric time-ball on the Nelson Monument, Calton Hill, overlooking the city, controlled by their observatory. Shortly afterwards a wire was run from the Edinburgh Observatory to the great port of Glasgow to work an electric time-ball on the Sailors' Home overlooking the river Clyde.



The Edinburgh Time-Ball

The electro-pneumatic mechanism for the time-ball was designed by Edwin Clark, the Company's engineer, in 1850 and was manufactured by John Sandys, of 72 Upper Whitecross Street, London, one of its contractors for instruments. In 1863 it was quoting £110 for a time-ball, £25 for a regulator clock, and £40 a year for providing a time-signal. To this would be added the construction of the circuit and subsequent maintenance.

An extremely precise transmitting instrument for the time signal, called the *Chronopher* (or *Chronofer*), was latterly devised by the Company's Samuel Alfred Varley, younger brother of C F Varley, in 1854 in Liverpool. The circuits were closed to traffic just before the hour and the time signal received from this device by ordinary needle telegraph instruments. The Chronopher was used to send Greenwich time to all of the Company's offices in the following year to adjust their regulator clocks so that the public might correct their watches from them.



In November 1867, the 'Gentleman's Magazine' described the workings of the Greenwich signals and the Chronopher: "One of these signals passes to the Electric & International Telegraph Company's offices in Moorgate Street, London, where there is placed a very beautiful piece of mechanism, planned by Mr. C. F. Varley (sic), and called by him the "chronopher", the office of which is as follows : At a few seconds, only four or five, before the hour, it cuts off the connection between every speaking instrument in the establishment and the wires leading therefrom to the provinces and

along the railway lines, and it “switches” all these wires on to the one wire along which the Greenwich signal is to come ; so that, at a few seconds to the hour Greenwich is what is technically termed “put through” to every station in the company’s service, and to every office to which the company’s wires are led. At the hour the Greenwich signal comes, and, without a moment’s stoppage or any interruption, passes through the scores of wires that emanate from the office, and through every branch of the ramification into which, all over the country, these main lines diverge and spread. At two seconds after the hour the chronopher restores the connection between the wires and speaking instruments, and the ordinary business is resumed, having been interrupted only for the brief space of four or five seconds. As it is needless that this signal should be repeated very frequently, the above marvellous operation is performed only once a day, at 10am... It is by means of these signals that time-balls are dropped and time-guns fired, and provincial clockmakers are enabled to exhibit dials showing Greenwich time in their shop windows.”

Starting in Liverpool in 1857 public clocks began to have an electric check installed which connected them to a single master timepiece that was regulated to one minute accuracy. The master clock at the Liverpool Exchange regulated commercial clocks in clockmakers and similar premises, and that at the Town Hall the public clocks, with electric circuits. This was a municipal initiative unconnected with but enabled by the timekeeping of the telegraph companies. Electric checks were soon adopted by the clockmakers of London and by the cities of Glasgow and Edinburgh.

So it came about that regional east-to-west time differences were abolished and London, or rather Greenwich, time became the national standard.

The Company began to transmit Greenwich time to the astronomical observatories at Cambridge and Edinburgh in Britain during 1854, then subsequently to the observatories at Brussels in Belgium and Paris. These latter signals were used to determine (by the standards of the period) the exact difference of longitude between the observatories.

On April 1, 1853 the Company opened its House of Commons Telegraph Office in the Lobby or Octagon Hall of the newly-rebuilt Parliament. It used two-needle instruments to send the reports of its Parliamentary shorthand-writers a half mile or so to its St James’s Street office in the centre of the most prosperous part of London and to Founders’ Court. At St James’s Street half-hourly abstracts of proceedings were printed by its own compositor and press-man for circulation to the twelve largest gentlemen’s clubs, Arthur’s, the Athenaeum, the Carlton, the Reform, the Oxford & Cambridge, the Travellers’, Brooke’s, the United University, the Conservative, the Union, the United Service and White’s, and to the salon of the Royal Italian Opera House in the Haymarket, and hourly to Boodle’s and Prince’s Clubs, by its three messengers. It became known as the “Club Telegraph”; the independent proprietress of this undertaking being Mrs Eliza Collet who received an annual payment of £10 per club, not to exceed £200 in all, for organising the service. It was continued by the Company until 1868, in which year Mrs Collet received £170.

It also served to “whip-in” Members of Parliament when a division vote was required.

Much longer, almost verbatim abstracts of debates were telegraphed daily from Founders’ Court to newspapers and subscribers in the provinces. The Octagon Hall office also gave Members of Parliament and the Lords Temporal and Spiritual access to the telegraph at the doors of their respective Chambers and, less popularly with the elected element, gave constituents immediate access to their representatives.

THE ELECTRIC TELEGRAPH COMPANY.

Electric Telegraph Company's Parliamentary Bulletin
Distributed to gentlemen's clubs, where Members of Parliament lurked during the day

The Royal Italian Opera House was of sufficient public interest to have its own telegraph line. This was opened on May 18, 1853, coinciding with the introduction of a new “Metropolitan” tariff of 1s for twenty-words between the Company’s London stations.

The Houses of Parliament caught up with technology quickly. The addition of the telegraph station in the Lobby was accompanied later in April 1853 by a large electric clock over the principal entrance. At the same time the Electric Telegraph Company installed a general system for notifying members of a division vote by means of thirty electric bells wired throughout the Palace, all “set in motion” by an officer of the House at the Lobby door.

Circuits of Air

To overcome the difficulty of sudden surges of messages at branches, in 1853 the Electric company introduced a 200 yard long 1½ inch diameter subterranean pneumatic tube between its Central Station, where there were many clerk-operators, and the Stock Exchange in London, where its office was particularly confined. A small stationary steam engine drew containers of bulk messages from brokers and jobbers by atmospheric pressure. The engineer was the Company’s Latimer Clark. It was so effective in collecting written messages in bulk that a slightly larger diameter 1,000 yard long vacuum tube was added in 1858 to the branch in Cornhill in London, and another from Lothbury down Fenchurch Street to the Mincing Lane office, serving the provisions trade, in June 1860.

In July 1860, Andrew Wynter, MD, wrote, in the magazine ‘Once a Week,’ a

description of the air circuits:

“For some years the Electric & International Telegraph Company have employed this new power to expedite their own business. Thus their chief office at Lothbury has been for some time put in communication with the Stock Exchange and their stations at Cornhill and Mincing Lane, and written messages are sucked through tubes, thus avoiding the necessity of repeating each message.”

“We witnessed the apparatus doing its ordinary work only the other day in the large telegraphic apartment of the company in... Moorgate Street. Five metal tubes, of from two to three inches in diameter, are seen trained against the wall, and coming to an abrupt termination opposite the seat of the attendant who ministers to them. In connection with their butt-ends other smaller pipes are soldered on at right angles; these lead down to an air-pump below, worked by a small steam-engine. There is another air-pump and engine, of course, at the other end of the pipe, and thus suction is established to and fro through its whole length. Whilst we are looking at the largest pipe we hear a whistle; this is to give notice that a despatch is about to be put into the tube at Mincing Lane, two-thirds of a mile distant. It will be necessary therefore to exhaust the air between the end we are watching and that point. A little trap-door - the mouth of the apparatus - is instantly shut, a cock is turned, the air-pump below begins to suck, and in a few seconds you hear a soft thud against the end of the tube - the little door is opened, and a cylinder of gutta-percha encased in flannel, about four inches long, which fits the tube, but loosely, is immediately ejected upon the counter; the cylinder is opened at one end, and there we find the despatch.”

“At the station of the Company ... it acts the part of messenger between the different parts of the establishment. The pipes wind about from room to room, sufficient curve being maintained in them for the passage of the little travelling cylinder which contains the message, and small packages, and written communications.”

As provincial message traffic also grew, on June 22, 1864 pneumatic tubes were opened in Liverpool between the Company’s main office in Castle Street 300 yards to its branch in Water Street and another 1,000 yards to the Exchange. As improved by the Company’s Latimer Clark and C F Varley the new Liverpool air tube was ‘double-acting’, working message carriers both ways. There was a one-horsepower steam engine in the Castle Street basement working two air pumps, along with a vacuum cylinder and a compressed air cylinder, both ten feet long by four feet in diameter. The system worked 20 inches of vacuum or 11 pounds per square inch pressure on the 1½ inch diameter lead tubes in 2 inch iron pipes, drawing or propelling message carriers to-and-fro at an estimated forty miles-per-hour. The instrument clerks at the tube ends used electric bells to signal the men at the pneumatic valves and pumps.

In the following year, 1865, Birmingham and Manchester had message-carrying air tubes. The Company, the Board reported, had then spent £4,400 on these ‘air circuits’. The London air circuits were also extended.

The two pneumatic tubes in Manchester connected the new main telegraph station in York Street with branches in Ducie Buildings at the city’s Royal Exchange (510 yards) and in Mosley Street (320 yards) on December 6, 1864. An additional 17 yard tube was added to connect the counter at York Street with the instrument gallery. There were 1½ inch diameter iron tubes, a 13 hp steam pump at York Street, with a vacuum cylinder to draw the message carriers and a pressure cylinder to return them. As in Liverpool they were controlled by a system of electric bells.

In the city of Birmingham a 1½ inch diameter, 140 yard pneumatic tube was laid between the Company’s office at the Exchange and the telegraph at the New Street railway station, through which the long lines to London, Liverpool and Manchester passed. It was worked by a small 3hp steam engine.

By 1870 the Company’s new *General Offices* at Telegraph Street in London was at the heart of a much enlarged network of seven air circuits: to Fenchurch Street, 980 yards; Leadenhall Street, 670 yards; Gresham House, 588 yards; Cornhill, 490 yards; Old Broad Street, for the British Indian Submarine Telegraph Company, 370 yards; the Stock Exchange, 324 yards and Founders’ Court, 223 yards. The first two tubes were to a new large 2¼ inch diameter, the remainder to the original 1½ inch size. The internal circuits within the General Offices then consisted of five tubes: to the Anglo-American Telegraph Company’s instruments, 62 yards; to the Indo-European Telegraph Company’s instruments, 57 yards; to the Engineer’s office, 50 yards; to the new South Instrument Gallery, 50 yards (all 2¼ inches in diameter and installed in

the previous eighteen months); and to the Intelligence Department, 44 yards (1½ inches diameter). The basement steam engine had to be replaced with a much larger 20hp version to cope with demand for air and vacuum. The air was also used for other purposes in the building.

These pneumatic telegraphs, carrying paper messages in bulk from office counters to instrument galleries, were the first of hundreds of miles laid in Europe and in America.

Direction

As well as capitalists and investors such as the brothers, John Lewis Ricardo and Samson Ricardo, the Company very quickly attracted an array of technical and management talent to its direction; Robert Stephenson, engineer of the London & Birmingham Railway, the London & North-Western Railway and of that company's many iron relatives, was to sit on the board, joining his business partner, the so-called 'calculating boy', George Parker Bidder. Bidder was a mathematical prodigy who became engineer of the London & Blackwall, South Eastern and many other railways in England and India; he was the largest shareholder in 1846 and for many years subsequently, remaining a director from its founding until its end in 1869. Bidder also had his law-agent, Richard Till, as a director. Till stayed with the Board until the mid 1860s.

In September 1853 the Board comprised J Lewis Ricardo, chairman, G P Bidder, W F Cooke, Thomas Crutchley, Lord Alfred Paget, S M Peto, W H Smith, Richard Till, and Colonel Wylde CB.

Robert Stephenson became a director of the Company on February 21, 1855.

During the early 1850s the railway contractor and financier Morton Peto was the most important new board member. Peto had privately lent a substantial sum of money to rescue the Company in 1849, and was soon to guarantee the finances of the Great Exhibition of 1851, such were his means. But by 1866 he was ruined.

By the 1860s the largest shareholder was Joseph Whitworth, the steel-master of Manchester, whose interests ranged from precision machine tools through steel manufacture to armaments. He held £70,000 of stock in 1860 and was also a director of and large shareholder in the London & North-Western Railway.

The ruthless General Manager of the London & North-Western Railway Company, then by far the largest public corporation in the world, Mark Huish, became deputy chairman in 1860 and stayed until his death early in 1867. He was replaced in that role by Frederick N Micklethwait, a director of the Great Western Railway. Previously Lord Alfred Paget, also a director of the North-Western railway, had became a director in 1853, and Thomas Brassey, the greatest contractor for building railways and other public works in Britain, Europe and America, and yet another a director of the North-Western, joined the board in 1858. Both stayed until the end in 1869.

W H Smith, the newspaper, magazine and book distributor, and Member of Parliament for Westminster, also was on the Company's board in the 1850s. For a period about 1853 his bookstalls acted as agents for the Electric Telegraph Company, accepting message forms for passing to railway telegraph stations.

Bookplate from J Lewis Ricardo's Library 1858
"John Lewis Ricardo, Esq., MP,
Founder of the first Electric Telegraph Company for national purposes -
Library presented by the Directors and Shareholders of the Company
over which he presided for 12 years, as a cordial acknowledgement
of the talent, energy and exertion by which he carried
their undertaking to a successful issue, 1858".
His own armorial flanked by those of the Electric Telegraph
and International Telegraph companies
(Picture courtesy of Stephen Wesley)

Robert Stephenson succeeded to the chairmanship of the Electric Telegraph Company in 1857, replacing J L Ricardo, but sadly his tenure ended with his premature death in 1859. The lawyer Robert Grimston took the chair for the rest of the Company's existence.

In addition to the Board in London the Company maintained small committees of shareholders not necessarily directors, in Manchester, Liverpool, Bristol, Glasgow, Edinburgh, Bradford & Leeds, Newcastle and Hull, the membership varying in numbers from seven to one. These local committees were a peculiarity of the domestic telegraph companies, serving primarily to encourage share participation and to monitor service provision at local level.

The Company's first Secretary, which in the nineteenth century was the senior salaried managerial position, equivalent to legal and business manager or chief executive officer, ignoring the interim appointment in 1846 of John Kymer, was William Henry Hatcher, an ambitious civil engineer interested in electrical apparatus. As well as being Secretary he was the firm's chief engineer and was also responsible, along with W F Cooke, for the construction of the first 1,700 miles of line that the Company built. Hatcher was replaced as Secretary by James Sealy Fourdrinier, a lawyer with engineering interests, one of the famous Huguenot émigré family of paper-makers, during March 1849. Fourdrinier, the Electric's longest serving manager, effectively oversaw the maturity of the Company in the 1850s; but he did not seem to be aware of the opportunities and threats the telegraph industry faced in the 1860s. On his retirement he was succeeded in January 1864 by Henry Weaver, who remained as the senior management figure until 1869. Weaver had been manager of the International Telegraph Company and Superintendent of the Electric's London District. Subsequently Weaver went on to be connected with the Indo-European Telegraph Company, and became Managing Director of the Anglo-American Telegraph Company.

In 1864 William Reid, the telegraph contractor, claimed that the "power behind the throne" at the Electric Telegraph Company in the period 1848 to 1859 was Douglas Pitt Gamble, Private Secretary to J Lewis Ricardo. Gamble obtained this post as part of the resolution of the legal suit over Nott & Gamble's telegraph and used his influence to have appointments made. These included the replacement of W H Hatcher by J S Fourdrinier in the role of Secretary. Fourdrinier, Reid claimed, had a poor reputation, being a weak negotiator, bullying of the clerks and a toady to the

board. He was only there to 'keep the seat warm' for Gamble.

Gamble successfully lobbied for his financial backer, Colonel William Wylde, to be appointed to the board of directors. That did not do him much good: in 1859 Gamble was summarily dismissed from his several positions in the Company for referring to the Board as "a set of old women".

A note is necessary on William Wylde, who was a director of the Electric Telegraph Company from 1848 until 1870. Wylde was an officer of the Royal Artillery, serving in Holland at the end of the French Wars. As an out-of-place half-pay major in the early 1830s he became an Assistant Poor Law Commissioner. Between 1836 and 1847 he was British military agent in Portugal during a civil war, cannily employing his two sons as secretaries. As his reward he became Equerry to Prince Albert in 1847, rising to be Groom of the Bedchamber in 1848. From this point on he became the archetypal ambitious courtier, marrying his only daughter off to a rich northern coal-owner. His army rank increased, achieving Major-General on June 20, 1854. In 1868 he became honorary Master-Gunner of the Royal Artillery. It may be said that he rose without trace.

Wylde did, however, use his royal connections to interest the Queen and Prince Albert in the telegraph.

J S Fourdrinier was latterly paid £750 per annum in salary. Henry Weaver received £1,000 a year on his appointment.

Thomas Colling Bennett was Accountant to the Company from the 1850s to the end. He latterly was also Secretary to the Channel Islands Telegraph Company and, when Henry Weaver left for the Indo-European company, became the Electric's last manager.

Between 1845 and 1848 W H Hatcher was assisted by Francis Whishaw, who in today's language may be said to have devised and developed the systems and processes used in the correspondence or message department. Whishaw, a prominent writer on technology, also undertook a large amount of public relations work, placing articles in the press and organising exhibitions for the Company.

The assistant secretary from around 1852 was William Barchard, who had previously been chief clerk in Liverpool. He returned to Lancashire and became a silk merchant. From the mid-1850s until 1870 the position was held by Henry Schütz-Wilson. He was employed by the Company to manage its 'foreign affairs'; travelling on its behalf through the German states and into Russia negotiating traffic rights. Schütz-Wilson was also a well-known Alpinist and writer.

William Henry Hatcher was the Company's engineer from 1846 until 1850, being for sometime in that period also the Secretary. He was responsible for construction of its first 2,000 miles of line. Little credit has been given him for this achievement, and his gradual elimination from the Company's management is mysterious.

The brothers, Edwin and Latimer Clark, the Electric company's engineers throughout the 1850s and 60s, had both been employees of Robert Stephenson's civil engineering firm before joining the Company. Whilst working on the great Britannia Bridge carrying the Chester & Holyhead Railway cross the Menai Straits from Wales to Anglesey from 1846 to 1850 Latimer Clark had a cannon ignited by an electric current each morning to awaken the labour force. Edwin Clark replaced W H Hatcher in August 1850. When he left to return to hydraulic and dock engineering in 1855 his younger brother was promoted from assistant engineer. Between them they managed the Company's major constructional works on land and sea, and were to have immense influence on domestic and underwater telegraphy.

Cromwell Fleetwood Varley, the Electric's most important electrician, initially for the London district in 1850 then for its entire network, in charge of all its apparatus and a major contributor to its technical base, was alone in having no other employer. He advised on many other major electrical projects and apparatus, including several of the Atlantic cables. His brother, Sidney, also worked for the Company for a period.

Nathaniel John Holmes, the manager and electrician of the Founders' Court station, was let go in 1848. He, too, was subsequently to make several innovations in telegraphy, domestically and in submarine works. He was a close associate of Wheatstone.

The Company's principal bankers were the formidable Glyn & Co., of 67 Lombard Street, who performed a similar function for the London & North Western, Great

Western and many other railway companies. George Carr Glyn was for a long time chairman of the London & North Western Railway, though the bank was not represented on the Electric's board.

As can be seen the railway interest if not dominant was heavily represented in all aspects of the Electric Telegraph Company's capital and management. From beginning to end there was a strong cross-representation of both direction and shareholding between the railways and the Electric.

The telegraph alongside of the railway in 1850
There is a semaphore signal to control trains on the right

Systematic Expansion
At the start of 1852 the Electric Telegraph Company announced that it had its Central Station in London and 226 provincial stations, 70 of which had constant attendance, day-and-night. It was working 2,500 miles of line with another 800 miles "in process of suspension".

James Graves, when he joined the Company as a clerk on February 26, 1852, had this impression of his new employer:

"The Electric Telegraph Company's Office is in Lothbury behind the Bank of England. Although they have numerous other offices, this one is the chief of the metropolitan offices and in fact of all the stations in the Company. It is as it were the centre of the Company, here all orders, rules and regulations are issued, and all the accounts received examined and passed, to this place the whole of the stations forward at intervals of two or three days all the messages received by them together with an abstract of them all. The whole management of this Company's business is carried on here. It is in this place that all the lines of telegraph in the United Kingdom and from the Continent radiate into one common centre - hence the distinctive appellation of 'Central Station' is derived and given to the Lothbury Station. The building in itself is a very extensive one, it consists of a large hall open up to the skylight - this is approached by a narrow passage called Founder's Court, in front over the doorway may be seen the large clock worked by electricity. On attaining the interior of the hall immediately before you may be seen the Committee Room - on the left a flight of stairs - leading to different departments on the different floors, some devoted to examination of papers, messages, accounts and other to instrumental operations, forwarding and receiving the messages. Another department is occupied in making up 'Expresses' and supplying press intelligence, this is called the Intelligence Department."

"On the right of the entrance behind the counter (which extends round two sides of the hall) is situated the Code Room, the Superintendent's office and immediately over this is the Secretary's Office and other Departments, the highest of which is used for instrumental work. The messages on either side are raised from the Counter

to the Instrument Room by means of a 'lift' which consists of a wooden square tube divided into two parts - a wheel and windlass handle placed at the top over which passes a rope furnished at each end with a square box – so that when one box is at the top the other is at the bottom and vice versa. A signal is given to draw up or put down the messages by means of a small bell and communication is held from top to bottom and vice versa by means of a gutta percha speaking tube. The whole establishment is carried on by strict order and discipline and every different Department has its own description of employment. Under the building is a large cellar where the batteries, acid, etc, are kept. The broken instruments or those found defective are repaired on the premises."

The Company's paid-up capital at the end of 1852 was £512,000 with a reserve fund of £73,400. It had spent £416,693 on its telegraphs including patent rights, spending £13,100 in that year on renewals and maintenance. Receipts from messages in 1852 had been £40,087; costs on that account had been £26,232 allowing for a dividend of 6½ % and a sum placed to the reserved fund. The principal directors at this time were J L Ricardo, G P Bidder, R Till and S M Peto.

New telegraph lines in 1852 were recorded opened on the London, Brighton & South Coast, London, Brighton & Newhaven, Chester & Holyhead, Carnarvon, Lancashire & Cheshire Junction, Manchester, Sheffield & Lincolnshire, Bristol & Exeter, South Devon, Great Northern, Manchester & Huddersfield, Shrewsbury & Chester, Shrewsbury & Hereford, and South Wales Railways, additional circuits added from London to Birmingham, Rugby to Leamington, Paddington to Oxford, Southampton to Lymington and for the Admiralty. New direct circuits were also made between London and Liverpool and London and York, with a cable to the Isle of Wight. A line erected by "a competitor" on a branch of the London & North-Western Railway was also replaced by one of its own. This was the last time for many years that the Electric Telegraph Company provided the public with such an engineer's report.

To combat competition a one shilling for twenty word message rate was launched in August 1853 for all stations within fifty miles of London, specifically including Birmingham, Brighton, Cambridge, Coventry, Northampton, Oxford, Rugby and Windsor.

The telegraph on the Great Northern Railway 1852
The poles in the foreground on the site of an accident at Spittalgate in October 1852

Between 1852 and 1853 the Company promoted several Bills in Parliament for powers that directly threatened its competition. In November 1852 it proposed a Bill to acquire the Submarine Telegraph Company. It also launched a Bill to enable a subsidiary, the International Telegraph Company, to work circuits in Britain along roads, railways and canals, as well as underwater cables to continental Europe. Then, in November 1853, it sought ambitious authority to work circuits in its own name not just in Great Britain, Ireland and in all Her Majesty's overseas dominions but also throughout Europe, Asia, Africa and America. These remarkably aggressive prospective legal powers were either rejected or abandoned.

Also during December 1853, imitating its competition that had adopted apparently weather-resistant subterranean circuits, the Electric Telegraph Company commenced laying long lines of six underground “express” wires insulated with gutta-percha resin from London to Manchester and Liverpool, and from Manchester to Leeds, in iron pipes alongside of the London & North-Western Railway.

Despite having its assistant engineer, Latimer Clark, rigorously test its new subterranean cables *underwater* at the Gutta Percha Company’s works in London in April 1852 it was surprised by the slow transmission of messages when compared with its overhead lines. The Company then had Michael Faraday and George Airy, two of the country’s most eminent scientists, examine the new lines. Faraday electrically tested two 100 mile coils of 1/16 inch diameter copper wire insulated with gutta percha to 3/16 of an inch, one set of coils suspended in the canal by its wharf and one set in the dry warehouse of the Gutta Percha Company; noting considerable differences between the two. These experiments were later used in addressing retardation in submarine cables.

On Friday, January 20, 1854 Prof Faraday demonstrated his findings on submarine circuits to the evening meeting of the Royal Institution in London. The Electric Telegraph Company provided him with 450 pairs of galvanic plates and eight miles of gutta-percha insulated wire to facilitate the lecture.

On May 21, 1854 the Company’s electricians, as an experiment, joined these six underground wires into one continuous copper circuit 1,100 miles in length, from its Strand office. They tried this immense line at first with a galvanometer and then, with moderate success, transmitted messages with a Bain chemical printing telegraph, their most sensitive instrument. This was the longest single circuit yet achieved.

As it turned out the gutta percha insulator, whilst stable when immersed in sea and fresh water, eventually oxidised and crumbled when exposed to air. The Company in five years had to revert to its original overhead iron wires. It took until August 1864 to eliminate the last underground circuits on its London, Liverpool and Manchester trunk lines; the last piece being at Rugby.

At this time, in either 1854 or 1855, the Electric established Stores as 17, York Street, York Road, Lambeth, on the river Thames, in the former premises of “Nickels’ Gutta Percha Company”. Nickels had previously supplied gutta-percha insulated wires for telegraphs. John Muirhead was Superintendent of the Stores. It only maintained this warehousing for a few years; transferring its stores for instruments, wire, poles and cable for the rest of its existence to a yard on the London & North-Western Railway at 44 Gloucester Road, Camden Town, in north London, right opposite the northern end of the very first, experimental line of telegraph. Under Muirhead’s management the Company built its own large Factory for batteries and instruments in 1858 around a courtyard at Gloucester Road. As well as developing the Company’s Factory Muirhead devised many improvements in cell technology and other apparatus.

In August 1854 the Company also had the fifteen miles of underground line connecting its eighteen stations in London, containing 350 miles of wire.

The Instrument Room at Charing Cross
A Bain printing telegraph in the foreground
The room is circular, in one of Nash's famous "pepper-pots"

The Company opened a Bain printing circuit in January 1853 between the Founders' Court in London and Southampton, alongside of its Cooke & Wheatstone two-needle circuit of 1844. There were then twenty-nine Bain printers in service, using separate circuits between the stations at Founders' Court, Charing Cross, Birmingham, Bristol, Edinburgh, Glasgow, Liverpool, Macclesfield, Manchester, Newcastle, Rugby, Southampton and York, usually installed in pairs at each office. The last lines using the Bain printer, with their single-wires, were opened shortly after to Bristol, Cardiff and Falmouth in England's West Country. They lasted in these large and busy offices until the 1860s.

To illustrate the growing complexity of managing telegraphic circuits, the separation between long and local lines, and also railway signalling; there were eighteen wires out from the Shoreditch terminus of the Eastern Counties Railway in London during 1852. Two wires comprised the long-line to Cambridge, Ely and Norwich; two wires covered the local stations between London and Brandon; two wires those to Broxbourne; two wires for the long-line to Colchester; two wires for the local stations to Chelmsford; and two wires to their London Goods' Office at Brick Lane. The other six wires were single lines working single-needle telegraphs and bells for railway signalling.

In another instance, at this time the southern area of the London & North-Western Railway between Euston Square in London and Normanton was separated by the telegraph company into three Divisions; from London to Birmingham, from Birmingham to Derby and from Derby to Normanton. The stations in the Divisions were in direct connection with each other but connected to the rest of the telegraph system through the “transmission” stations at London, Birmingham or Derby as was appropriate, where there were switches between circuits. The transmission stations also had direct, independent circuits or long-lines between themselves.

The Division between London and Birmingham carried seven wires in 1849. Two were for the very long line from London through Birmingham to Derby, Normanton, York and Newcastle for Scotland; two were for the intermediate long line to Birmingham, Manchester and Liverpool; two were for the local or Division line covering Euston Square, Camden Town, Tring, Wolverton, Rugby, Birmingham, on to Stafford and Crewe; and the odd single wire was for the Bain printing line from London to Manchester. The other lines worked the Cooke & Wheatstone two-needle instrument. By 1852 the London to Birmingham Division had increased from six to seven telegraph stations; at Euston Square, Camden Town, Tring, Wolverton, Rugby, Coventry and Birmingham.

The Divisions were aggregated into geographical Districts; the Company's main administrative unit.

Statistics on the Telegraph in the United Kingdom in 1854
Compiled by H A Murray

Electric Telegraph Company
Miles of line.....5,070
Miles of wire in cables.....5,000
Miles of wire on poles.....20,700

Magnetic Telegraph Company
Miles of line.....1,740
Miles of wire in cables.....6,180
Miles of wire on poles.....4,076

Submarine (& European) Telegraph Company
Miles of line.....400
Miles of wire in cables.....2,740
Miles of wire on poles.....–

British Telegraph Company
Miles of line.....1,000
Miles of wire in cables.....2,755
Miles of wire on poles.....3,218

Electric Telegraph Company of Ireland
Miles of line.....88
Miles of wire in cables.....176
Miles of wire on poles.....–

Total Miles of line, 1854.....8,298
Total Miles of wire, 1854.....44,845

Of these 534 miles of line were submarine, employing 1,100 miles of wire in underwater cables.

Murray quotes the cost of putting up a telegraph originally as £105 per mile for two wires and that experience now enabled it to be done for £50. The cost of laying down a submarine telegraph was stated to be about £230 per mile for six wires, and £110 for single wires.

Of the three principal companies, from 25,000 to 30,000 miles of wire were worked on Cook & Wheatstone's system; 10,000 on the magnetic system - without batteries; 3,000 on Bain's chemical principle and the remainder on Morse's plan.

The Moving Fire
From 'The Quarterly Review', July 1854

"Jammed in between lofty houses at the bottom of a narrow court in Lothbury, we see before us a stuccoed wall ornamented with an electric illuminated clock. Who would think that behind this narrow forehead lay the great brain – if we may so term it – of the nervous system of Great Britain; or that beneath that narrow pavement of the alley lies its spinal cord, composed of two hundred and twenty-four fibres, which transmits intelligence as imperceptibly as the 'medulla oblongata' does beneath the skin? Emerging from this narrow channel the 'efferent' wires branch off beneath the different footpaths ramify in certain plexuses within the metropolis, and then shoot out along the different lines of railways, until the shores of the island would seem to interpose a limit to their further progress. Not so, however, as is well-known, for beneath the seas, beneath the heaving waters, down many a fathom deep in the still waters, the moving fire takes its darksome way, until it emerges on some foreign shore, once more to commence afresh its rapid and useful career over the wide expanse of the Continent."

Quoted by Maria Rye in 'The Rise and Progress of the Telegraphs', 1859.

The International Telegraph Company
The International Telegraph Company was an independent creation of the Electric

company, connected its English circuits to those of the European continent by an underwater cable from East Anglia to Holland. It had been granted a concession by the Ministry of the Interior of the Netherlands government on May 10, 1852. The initial 110 mile cable was completed on May 30, 1853; this opened its business not just to the North European states but also to Russia, the Balkans, Ottoman Turkey, the Levant, and eventually, in a little over ten years, to the vital British possession of India.

As it did not have circuits in Britain the International company was constituted under a Royal Charter rather than being debated through an expensive and time-consuming Act of Parliament.

The first public messages between Amsterdam in the Netherlands and London were transmitted on August 15, 1853, relayed through the International Telegraph Company's station at The Hague. There were already international circuits onward into Belgium dating from December 1, 1852, and into Prussia, opened on February 1, 1853. The Company announced access from all of its stations in Britain to Amsterdam, Antwerp, Berlin, Bremen, Breslau, Dantzic, Florence, Frankfort-am-Main, Hague, Hamburg, Hanover, Strassburg, Leghorn, Lübeck, Milan, Pressburg, Rotterdam, Trieste, Venice and Vienna. With current technology these messages could not be sent direct, point-to-point, but had to be "translated", or retransmitted, several times at intermediate stations.

To aggressively compete with the Submarine Telegraph Company's cable from Dover to Calais, in December 1853 it sent continental messages via the Hague from all of its provincial stations in Britain at the same price as those from London.

The Electric Telegraph Company's steamer Monarch *laying the first cable to Holland in May 1853, the escort HMS* Adder *steaming ahead of her*

The laying of the Company's first underwater cable from Orfordness to Scheveningen, manufactured by R S Newall & Company, the maker of the first successful submarine circuits, was superintended by Edwin Clark, the Company's engineer-in-chief. He was assisted by F C Webb as submarine electrician. Webb went on to be the chief electrician to the Atlantic Telegraph Company, and contributed to the successful laying of the first intercontinental cable in 1866.

Three more identical cables were laid between England and Holland, on June 16 and 17, 1853; on September 8 and 9, 1853 and September 29 and 30, 1855. All were of light weight with single cores, and made by Newall.

Originally the International company had four underground circuits from Scheveningen to Den Haag where the Company had its own offices. But on September 1, 1855 the Hague office was closed and four new wires solely for international service were laid alongside the line of Holland Railway Company to rooms in the *Rijkstelegraafkantoor*, the main telegraph station, on Nes, in the oldest part of central Amsterdam. This moved in December 1856 to much larger new premises on Nieuwezijds Voorburgwal, by the Royal Palace at Dam.

On January 29, 1855 a convention had been signed between the *Rijkstelegraaf* in Holland and the German Austrian Telegraph Union for a direct circuit between

Amsterdam and Hamburg, the major port in northern Europe. Experiments were made by the Company during September at its new office in Amsterdam with messages direct to Hamburg, Vienna and Dantzic, even to Königsberg in eastern Prussia.

Cooke & Wheatstone had made the first electric telegraph in the Netherlands between Amsterdam and Haarlem on the same Holland Railway in May 1845.

With the opening of its cables to Holland and the continental telegraph system in June 1853 the Electric adopted the "European Alphabet" for the Bain printers and single-needle instruments throughout its entire system. This was the continental version of the code or cipher used in America. The much more common two-needle instruments retained their own code.

In the following year it introduced Siemens & Halske's American printing telegraphs on its foreign circuits.

After three attempts, on September 4 and 5, 1854, the Electric finally completed the 65 mile single-core underwater circuit from Holyhead to Howth of the short-lived Irish Sub-Marine Telegraph Company, whose rights it had acquired in 1852, joining its circuits to Ireland by the most direct route, off its line on the Chester & Holyhead Railway, an ally of the London & North-Western company. The amount of traffic necessitated the construction of a second cable to Dublin on June 13 and 14, 1855. Both were manufactured by R S Newall.

The International Telegraph Company managed the construction of the Dublin as well as the Holland underwater circuits on behalf of the Electric company.

For several years the Electric's presence in Ireland was limited to one office, at 4 College Green in Dublin. It only extended its lines to cover the principal towns of Belfast, Cork and Wexford in the mid-1860s; its communication to the island was limited to the capital until then.

Although other companies pioneered submarine telegraph cables to Europe and to Ireland the Electric was to dominate the English and Scottish domestic offshore cables. Its electrical and engineering staff used these small beginnings to develop an unmatched knowledge of the requirements for underwater telegraphy that eventually enabled the ultimate success of the intercontinental cables of the 1860s and 1870s. As noted, it resolutely re-laid the broken Holyhead to Howth cable. Before that it had already spanned the broad estuaries of the Forth and Tay rivers in Scotland on December 22 and 24, 1853 respectively, to access the far north of the country. For these it had acquired the 500 ton wood-hulled paddle steamer *Monarch* in 1853 and converted her to lay underwater cables; she was kept in service for the life of the Company.

To connect the major offshore islands the Electric projected between 1852 and 1869: (year completed)

The Isle of Wight Electric Telegraph Company (1852)
The Channel Islands Telegraph Company (1858)
The Isle of Man Electric Telegraph Company (1859)
The Scilly Islands Telegraph Company (1869)
The Orkney & Shetland Islands Telegraph Company (1870)

The first domestic public cable, and the second successful sub-sea circuit, was that of the *Isle of Wight Electric Telegraph Company* of 1852. This had thirty-two miles of land line and one-and-three-quarter miles of submarine cable (between Hurst Castle on the mainland and Sconce Point on the Island). In addition part of the line between Keyhaven to Hurst Castle on a long sand-spit was also laid as a submarine cable, as was the crossing of the river at Yarmouth. It was undertaken at government behest to provide the Royal Household at Osborne House in East Cowes with electric communication. The Company's original engineer was Charles West who pioneered the use of india-rubber insulation for electrical circuits; he was to be replaced by Latimer Clark, the Electric company's assistant engineer.

The Isle of Wight company's circuit ran from the city of Southampton to Brockenhurst on the long-extant overhead lines by the side of the South-Western Railway, and underground from Brockenhurst to Hurst Castle on the mainland and underground between Sconce Point and Cowes on the island alongside of the common roads. It was unique at the time in using india-rubber insulation for its

circuits, subterranean and submarine, from Brockenhurst to Osborne. The underwater cable was uniquely armoured with *plaited* iron wire. The Isle of Wight Telegraph had stations at Southampton, Lymington, Yarmouth and Cowes, with a private branch to Osborne House, and opened throughout on October 14, 1852. It used five Cooke & Wheatstone instruments in its line. The short cable across the Solent proved vulnerable to ships' anchors and was broken within eighteen months; it had to be replaced four times by 1861, although the sections of the 1852 cable from Keyhaven to Hurst Castle and across the river Yar were still in good condition after ten years service. The Electric company absorbed the Company as soon as it opened its line, and was to lay a second, parallel cable to the Isle of Wight in 1867.

The *Channel Islands Telegraph Company* had a capital of £30,000 in £10 shares. The Electric contributed £4,200. Its board of directors, and chief shareholders, in June 1858 were Robert Grimston, chairman, D de Quetteville, W Tupper, L W Robins, D M Gordon, P Gosset and H Carrel. Grimston was chairman of the Electric company, Tupper and Gordon represented the manufacturers of the cable, who underwrote the enterprise. The government in London guaranteed the company an income from civil service and military messages of £1,800 per year, or as much as would bring its annual dividend to 6%, for 25 years, but only for when the cable was working.

Its circuit to England opened on September 7, 1858, connecting with Electric's circuit alongside of the London & South-Western Railway to Southampton, having cost £25,280. The 180-mile line from Southampton to Guernsey and Jersey via Alderney originally had three Siemens & Halske relays in its circuit but these were found unnecessary. In 1860 the Channel Islands company was working 93½ miles of submarine line from Weymouth in England to Portland, Alderney, Guernsey and Jersey, and 23 miles of underground cable in wooden troughs on the islands, with three stations, open from 8am until 8 pm daily, and had 13 employees dealing with 11,102 messages. It used the American telegraph, made by Siemens & Halske, in its circuits. The cable, the longest domestic underwater circuit, manufactured and laid by R S Newall & Company, sadly failed, after many repairs, in June 1861 after having £4,010 more spent on it.

The Channel Islands company, in 1860, charged 5s 8d for a twenty word message to and from the Electric's provincial stations in England, 5s 0d to London, 4s 0d to Southampton and 1s 0d between islands. Messages were sent to and answers received back from London in 1860 in forty minutes.

The Submarine Telegraph Company had Glass Elliot & Company lay a competitive circuit between Pirou in Normandy in France and Filquet Bay, Jersey in January 1859, routing messages via Paris, Calais and Dover to London. When the direct cable failed in 1861 this became the sole route, with a consequential 50% increase in charges. The rate became 7s 6d when the Submarine simplified its prices in 1862. The two telegraph companies had offices in the same building in Jersey.

The *Isle of Man Electric Telegraph Company*, of Douglas, IoM, was formed in 1859 "for telegraphing messages to all parts of the island and to England". It was an entirely local promotion and, as the island is not a part of Britain, the Company was a statutory incorporation by the Tynwald, the Manx Parliament, on August 10, 1860, with a modest capital of £5,500 in shares of £10. Only £4,800 was needed to be called-up for a 36 mile long cable, manufactured and constructed by Glass, Elliot & Company of Greenwich in August, 1859 from Point Cranstal, four miles north of Ramsey, IoM, to Saint Bees' Head in Cumberland, England, using the chartered steamer *Resolute*. The Company also erected twenty miles of land line south from Cranstal to Ramsey and Douglas, and four miles more north from Saint Bees' to the town of Whitehaven, the nearest mainland telegraph circuit. The Manx company had telegraph offices at Atholl Street, Douglas and East Quay, Ramsey. The Chairman was Samuel Harris; its Secretary and Manager was Pieter Johannes Duyshart, who earned £226 in yearly salary. Messages were transmitted from Douglas, the Manx capital and its largest town, direct to Manchester in northern England using the American telegraph on the Electric's circuits. The Company was bought by the British Post Office for £16,106 in 1872.

The Scilly Islands Telegraph Company 1869
The first cable being landed from the steamer *Fusilier*
at St Mary's on the Scilly Isles

The *Scilly Islands Telegraph Company* was promoted by Messrs Ashurst, Morris & Company, of 8 Old Jewry, London, in June 1869 with the support of Augustus Smith, who leased the Scilly Islands from the Duchy of Cornwall, after the Post Office refused to support a cable from the islands to the Cornish mainland. Along with the Islanders, over 600 merchants and ship-owners had lobbied for a telegraph to communicate with a notoriously dangerous area for shipping. The cable was to be constructed to the patent of William Rowett, also one of the promoters, with a single, india-rubber insulated, core and a thick hemp rope outer covering, manufactured and laid by the contractors, R S Newall & Company. As well as a thirty-one mile circuit from Land's End, the westernmost tip of Cornwall to St Mary's, the principal town of the Scilly Islands, there were to be two additional lines to the lighthouses on the islands' rocky shore. The principal circuit was completed on September 25, 1869, the Company having offices in St Mary's and Penzance in Cornwall for messages, charging 2s 6d for a twenty word message between the two places. In the latter it connected with the Electric Telegraph Company. The extensions to the lighthouses were not built, leading to great losses of life where immediate reports of several shipwrecks were unable to be sent to the coast guard. The hemp-covered cable failed and in April 1870 the Islands company employed Nathaniel Holmes, electrician and engineer to the Great Northern Telegraph Company of Copenhagen, with its several North Sea cables, to under-run it from the Scilly shore to find the fault and have it repaired. This proved a temporary measure and on June 20, 1870 W T Henley, the telegraph cable manufacturer and contractor, replaced Rowett and Newall's defective work with a new cable, having the usual iron-wire armouring. His work lasted until the government appropriated the Company's assets on April 24, 1878.

Finally, the *Orkney & Shetland Islands Telegraph Company* was promoted by a local merchant and landowner, George H B Hay of Laxfirth on Shetland, in 1868. Once again Nathaniel John Holmes was employed as electrician and engineer. The Islands company had a capital of £20,000, obtaining a modest guarantee of interest from the local boroughs. It employed WT Henley and Reid Brothers of London to successfully lay a 260 mile series of land lines and single-core cables from the town of Wick and the coast station of Voe in Caithness in the far north of Scotland across the Pentland Firth, through Orkney to Boddam and across the straits on to Lerwick in the Shetland Islands, with a separate section to Balta Sound on Unst, the most northerly inhabited island, in April 1870. It charged a Special Rate of 2s 0d for twenty words to Lerwick and 3s 0d to Unst. The main land cable broke in 1874 and was replaced, and the Shetland cable duplicated, in December 1874. However the damaged cable was repairable and the Company then had "double" cables. The message rate soared to 6s 0d for twenty words to pay for the new works.

The earliest underwater cables, domestic and foreign, of the Electric company were distinguished by having a single, relatively large diameter copper conducting wire as the core. Where traffic necessitated it, two or more cables were laid.

The Company's own steamer, *Monarch*, laid the Tay, Firth, Isle of Wight, Holland and Ireland cables and was kept busy repairing these and the Channel Islands' circuits for two decades. Other companies owning submarine cables used chartered vessels.

Monarch was built in 1830 by Pearsons of Thorne, inland south-west of Hull, for William Batchelor Brownlow and William Hunt Pearson trading as the Hull Steam Packet Company. She had a wooden hull and side-lever engines driving paddle-wheels. *Monarch* was 512 tons gross, 295 tons register, 156ft 3ins long overall, 19ft 9ins in breadth and 14ft 6ins depth of hold, with a crew of eighteen. Her two-cylinder engines achieved 130nhp. She had been employed by Brownlow & Pearson on the Hull to Hamburg route from April 10, 1830 for 23 years until sold to the Electric Telegraph Company.

The vessel was acquired by the Company on May 14, 1853, re-registered in London as No 18,604, with flag identity MNLF, and fitted-out to lay and repair underwater cables, with cable brakes, buoys, anchors, sheaves and winches. *Monarch* was fitted with the first picking-up machine, and became the first vessel to grapple for a lost cable and successfully carry out a repair at sea. The original on-board electrical instrumentation consisted of a vertical galvanometer in gimbals and a single-needle instrument for speaking to shore. Her home port was Lowestoft.

It was the Company's assistant engineer Frederick Charles Webb who searched out the *Monarch*, when she still belonged to Brownlow & Pearson of Hull, and arranged for the equipping for her new role. He selected her as she had holds less interfered with by beams than anything of the size he had been able to find. The price was £6,200, paid to the owner Pearson in cash, much to the distress of T C Bennett, the Electric's accountant, who had to hand the money over in person on the dockside in Hull.

F C Webb gave an account of his four years working with the steamer in the 'Electrician' magazine in May 1884. "The old *Monarch*, if she could not go fast - about seven and a half knots was her fastest, if I recollect right - could creak to perfection (she was a wooden ship, and twenty-three years old when we bought her). She used to begin with a deep groan below the deepest growl of a Lablache, or a Formes, and then slur up to a note an octave higher than the highest note of a Patti." Webb had a musical bent and clearly knew the opera singers of the day.

Webb continued "During the four years I gradually organised the system of buoys, mushroom anchors, bridles, grapnels, &c, which, with the picking up gear and brake, caused the *Monarch* to be the first ship regularly equipped for cable repairing, and she may consequently be fairly considered the father ['the mother', surely?] of the fleet of repairing steamers".

For almost all of her cable-laying life *Monarch* was under the command of Captain James Blacklock, who in addition to his duties as master mariner became, in the late 1860s, the Company's Submarine Engineer. He was a Scotsman, from Kirkcudbright, born 1821, obtaining his steamship master's certificate in 1854. After handling *Monarch*'s operations for sixteen years, in April 1870, Blacklock was appointed to replace Sir James Anderson as Marine Superintendent of the Anglo-American Telegraph Company, managing its maritime affairs. He died in 1883.

The 'Illustrated London News' reported that the initial Holland cable was loaded into *Monarch* in five coils, two in the main hold and three in the fore hold, coiled alternately in order to keep the ship trimmed during paying-out, and in oblongs to save room. The cable was paid-out over a sheave erected on shear-legs over each hold, carrying it high over the deck and allowing it to untwist and straighten. Rope was used to secure the coils together in the holds and cut out gradually as the cable ran out. Twelve men worked in the cable holds.

Monarch, with all of her specialised equipment, was occasionally chartered to the Submarine Telegraph and the Magnetic Telegraph companies in the 1850s to repair their underwater cables.

The Electric Telegraph Company engaged at this time in two other foreign ventures; but overland rather than undersea. One of its directors, the railway contractor Morton Peto, commissioned the Company to erect a line-side overhead telegraph on the *Norsk Hovedjernbane* or Norwegian Trunk Railway, fifty-six miles with seven stations between Christiania and Eidsvold on Lake Mojoven. This was the first railway and first telegraph in the newly independent Kingdom of Norway; one-half the capital was English, Lewis Ricardo was a director, and it was engineered by G P Bidder. It was completed by Peto, Brassey & Betts on September 1, 1854.

In March 1853 Peto also commissioned the Company to build a telegraph alongside

the *Sydslesvigske Jernbaner*, the South Slesvig Railway, incorporated in England as the Flensburg, Husum & Tönning Railway Company; known also, grandly, in London as the "Royal Danish Railway". It was intended to connect the North Sea and the Baltic Sea, and Denmark with Prussia, joining the towns of Rendsburg, Schleswig, Flensburg, Tonning, Esbjerg and Husum. Peto, Brassey & Betts were again the contractors for building the sixty-nine miles of railway works, and G R Stephenson, brother of Robert, was the engineer. The first major component of the Royal Danish Railway, from Tonning to Flensburg, was opened during October 25 1854. It was part of Peto's scheme to integrate the resources of the Eastern Counties Railway Company, the Port of Lowestoft and the North-of-Europe Steam Packet Company, all of which he had financed.

On March 16, 1854 the Company announced that it had opened a connection with Denmark through its Holland cables, and that, among others, the towns of Elsinor, Copenhagen, Kersoer, Nyberg, Frederika, Rendsburg, Hamburg and Altona were in that circuit.

The Electric Telegraph Company was responsible for erecting the 125 miles of poles and iron wires and the interior circuitry on both Scandinavian lines; which used Cooke & Wheatstone's two-needle telegraph system.

John Henry Greener was the Electric Telegraph Company's engineer in Norway and Denmark between 1854 and 1855. In 1855 he returned to become the Company's Assistant Engineer, surveying potential extensions into Ireland. Greener had acquired his electrical skills with the telegraphs of the London & Blackwall Railway in 1843 before joining the Electric. He left the Company in 1860 to undertake many telegraphic projects in India and the Middle East.

From this period the Company maintained a consistent policy of isolating risk in regard to capital. It carefully financed external projects, that is, new and technically-hazardous underwater cables, through subsidiary companies. The capital it raised in its own name was devoted to domestic land-based business. Only when the new business was secure did the Electric absorb its capital and its risks. Eventually, jumping ahead in this chronology, it also created a 'sphere of influence' in Europe based upon its enormous foreign traffic, driven by the commerce of London, Liverpool, Manchester and Glasgow. It held out the promise of revenues, as well as lending its technical and management support, to ever longer lines created by a series of foreign allies towards its strategic destinations.

The Electric Telegraph Company and the Railways in May 1854
Compiled by Dionysius Lardner

Company	Miles of Wire	Instruments
Bangor & Caernarvon Railway*	26¼	6
Birmingham, Shrewsbury & Stour Valley Railway*	226	19
Chester & Holyhead Railway*	336¼	15
Eastern Counties Railway	1,372	205
Eastern Union Railway	87¼	8
Exeter & Crediton Railway	82½	4
Furness Railway	3¼	2
Great Northern Railway	1,499	49
Great Western Railway†	1,952½	102
Lancashire & Yorkshire Railway	436	41
Lancaster & Preston and Lancaster & Carlisle*	188	9
London, Brighton & South Coast Railway	327	53
London & Blackwall Railway	20	4
London & North-Western Railway*	4,522	167
London & South-Western Railway	799¼	38
Manchester, Sheffield & Lincolnshire Railway	385	31
Maryport & Carlisle Railway	56	9
Midland Railway	2,451¾	114
Monmouthshire Railway*	64	14
North London Railway*	73	3
North Staffordshire Railway*	748¼	32
Oxford, Worcester & Wolverhampton Railway†	249	30
Shrewsbury & Birmingham Railway†	118	9
Shropshire Union Railway*	58½	3
Shrewsbury & Chester Railway†	182	9

Shrewsbury & Hereford Railway	104¼	16
Newport, Abergavenny & Hereford Railway†	82	3
Hereford, Ross & Gloucester Railway†	10	2
South Devon Railway†	432½	27
West Cornwall Railway†	50	7
South-Eastern Railway	970½	112
South Staffordshire Railway*	30	11
South Wales Railway†	691	49
Taff Vale Railway	63½	7
Vale of Neath Railway†	49	9
Whitehaven Junction Railway	24	4
York, Newcastle & Berwick Railway	1,532¾	64
York & North Midland Railway	521¼	40
Edinburgh, Perth & Dundee Railway	196	11
Edinburgh & Glasgow Railway	402¾	14
Dundee & Arbroath Railway	13	1
North British Railway	352½	12
Scottish Central Railway	4	0
London Offices	500	76

Of these instruments 1,250 were Cooke & Wheatstone double-needle, 177 Cooke & Wheatstone single-needle and 29 Bain printers. The Bain lines connected the major cities.

The single-needle apparatus was then used primarily on rural branches and to control access to tunnels and single-line railways. There were no single-needle telegraphs as yet in use in London.

Worth noting is the concentration of wires in the north-east of England in 1854 due to the railways in the north-west being contracted to competitive companies. The lines marked with an asterisk * are those of the London & North-Western Railway and its allies; those with a dagger † are those of the Great Western Railway and its associated companies.

The Electric Telegraph Company was always aware of the contribution of its staff. On Monday, January 9, 1854 the directors sponsored a supper for the 135 clerks working in Founders' Court at Radley's Hotel, 10 & 11 Bridge Street, Blackfriars. There were then 310 clerks working in the metropolis and 940 in the provinces.

Later that year, on June 2, 1854, the King of Portugal and his son, the Duke of Oporto, paid a ceremonial visit to the Central Telegraph Station at Founders' Court, along with the offices of 'The Times' newspaper.

In 1851 Julius Reuter arrived in London from Aix-la-Chapelle intending to establish an agency for distributing foreign news to the journals of London. The parochial press in Fleet Street and the Strand rejected his services and he commenced business on October 14, 1851 collecting and distributing commercial intelligence from continental sources for private subscribers in the business community, and providing British news for his overseas connections. He also, as a side-line, managed the private overseas telegraphic traffic of merchants unused to the new medium. In September 1853 Reuter "agreed with the Electric Telegraph Company to transmit all his dispatches, and such other messages as he could collect or influence, for a commission on the company's charges" through its new cables to Holland. This arrangement was extended in January 1854 when the Company agreed to support the development of Reuter's foreign news business by allowing him to send and receive public intelligence with a preferential discount of 50% on the ordinary message rates. Despite this it took him four years to convince the London press to use his service.

The Company's lawyers, Burchell & Parson, lodged a curious application for a Royal Charter in the name of a new concern to be called "The Telegraph Company," on January 4, 1854. It had as its objective the formation of "one continuous or uniform system of telegraphic communication between Dublin, the north of Scotland, Osborne, Windsor and London, and between those places respectively and the other principal cities and towns in the United Kingdom". Nothing is known of this new concern, but it is reasonable to surmise that it was to be a vehicle to acquire and unite the capital of the new competitive firms, formed after the lapse of the Cooke & Wheatstone patents, with that of the Electric Telegraph Company. It was not

proceeded with and the Company took instead to negotiating agreements to avoid unnecessary competition in the summer of 1855.

Mid Decade
On June 1, 1854 the Company introduced *Franked Message* stamps, relatively large adhesive labels (quite large enough to have abbreviated regulations on their face and to be signed by the sender) for twenty word messages, in three denominations, under 50 miles on pink paper (1s 0d), under 100 miles on blue (2s 6d) and over 100 miles on white (5s 0d) that could be stuck on to its ordinary message forms or even onto plain paper. Messages could be so pre-paid and left at or delivered by one's servant to one of its stations, speeding up the transaction. In January 1855 the wordage and mileage limits on these large label-like stamps were abandoned and more flexible monetary values adopted. In August 1855 the rate changed after "free" addresses were allowed and the Franks then were valued at 3d, 1s 0d, 1s 6d, 2s 0d, 3s 0d and 4s 0d, all on different coloured papers. These were used until 1861.

The Franked Message stamps were available from stationers in addition to the Company's offices, in London these were: W J Adams, 59 Fleet Street; J Airey, 53 Shoreditch; H Good, 60 Moorgate Street, A J Hall, 78 Old Broad Street; Vacher & Son, 29 Parliament Street; and Waterlow & Son, 49 Parliament Street, 24 Birchin Lane and 65-68 London Wall.

Many businesses about the country began to sell the Electric's message forms and stamps and became *telegraph agents*, forwarding messages to the nearest office on the lines between 1854 and 1856.

In the same month, June 1854, the Company opened an independent marine telegraph connecting Hurst Castle, where the Isle of Wight cable left England on the western entrance to the Solent, with the port of Southampton. It erected masts for flags at the Castle using Captain Marryat's *Code of Signals for the Merchant Service* to speak with inbound steamers that they might inform their owners and agents at the port of their cargo. One of its first uses was to give notice of the arrival of the visiting King of Portugal's fleet to Queen Victoria.

As it gradually expanded in domestic lines and its investment in overseas cables the paid-up and debt capital of the Electric Telegraph Company reached an impressive £512,000 in 1855. In that year it was authorised by Parliament to merge its capital with that of its subsidiary, the International Telegraph Company, which owned several cables to Europe through Holland, to create *The Electric & International Telegraph Company*, a remarkably cumbersome title. The Act of 1855 allowed it to use either the new or the original title for its business, which it did interchangeably. To the end, with the public, it was still 'the Electric'.

Electric Telegraph Company
Staff at the principal stations 1854
From the 'North British Review', February 1855

	London	Liverpool	Manchester
Male clerks	141	34	41
Female clerks*	52	12	17
Messengers	83	19	16
Engineers	9	-	-
Total	*185*	*65*	*74*

Total by employment 1854

Clerks & Messengers	994
Female clerks	81
Engineers	139
Total staff	*1,214*

* Females were only employed in these three stations

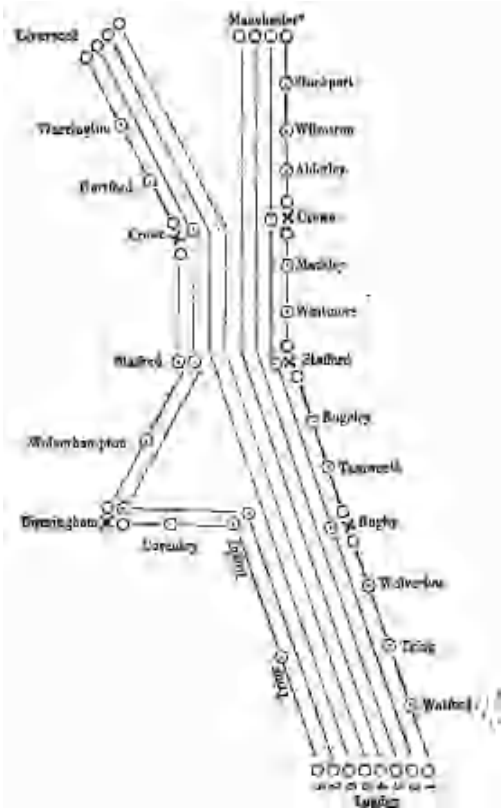
Just at this moment Britain, France, Sardinia and Turkey went to war with Russia in the Crimea. The conflict had a severe, if temporary, effect on the British economy particularly on iron, coal and foreign commerce between 1854 and 1856. The telegraph benefited from some increased 'distress' traffic but not from the

consequent fall in investment as capital was distracted.

In support of the war the Company trained a corps of soldiers in single-needle telegraphy and provided the army with a waggon-train carrying all the apparatus – instruments, batteries and underground cable – for a field telegraph, the first in the world. The twenty-four man corps and its equipment was landed in the Crimea during the frozen month of December 1854 and had connected all of the fighting units, supply bases and headquarters with electric telegraphy by March 1855.

In November 1854, as the hostilities commenced, the Electric Telegraph Company arranged that any *officer* engaged in the Russian campaign could send a message by the continental telegraph system to its station at The Hague and it would be forwarded to their relatives or friends in Britain without further charge.

A new Special Act of Parliament obtained by the Company in 1854 gave limited-liability protection to all of its shareholders, encouraging investment.



Electric Telegraph Company's
London - Liverpool - Manchester Circuits 1861
Divided into Long Lines and Divisional or Local Lines, the
divisional sectors shown by the Xs
(Click on image for larger version, click on Previous Page to resume)

Maturity & Success
At home the greatest length of any one line in the Electric's system in 1855 was about 600 miles, from Aberdeen to Plymouth. Each two-needle telegraph circuit required at this time two wires (with earth returns); traffic on the busiest segments required multiple circuits; the line from London to Rugby had nine wires, from Newton Junction (where the London and the Manchester circuits combined) to Liverpool eleven wires, and from York to Newcastle ten wires. The odd single wires were the Bain lines working chemical printers.

It then possessed 27,711 miles of wire, with 404 stations and 2,458 Cooke & Wheatstone and Bain instruments. In 1855 it worked 717,404 messages.

In the year 1855 the Company negotiated away price competition in messaging.

The Chairmen of the Electric Telegraph Company and of the English & Irish Magnetic Telegraph Company signed an agreement on July 19, 1855 fixing their message rates to a national joint tariff. This unpublished collusion became effective on August 1, 1855.

The Electric's shareholders' meeting reported on August 2, 1855, that the British Telegraph Company also adopted the unified tariff. It remained operative until the end of the public companies in 1868.

From this time, 1855, the Company began to make more intense use of its circuits, doubling its capacity, if not its effectiveness, by gradually replacing its double-needle instruments using two-wires with the single-needle apparatus that used single wires. This also allowed it to install American electro-magnetic printers for high-density traffic on the same circuits, rather than have separate Bain chemical circuits as it had previously.

C F Varley, the Company's electrician, was not content with the "on-off" key of the original American telegraph, and in 1854 introduced *current reversal* or *double current* operation. The line current was kept permanent for the duration of the message and the ingenious key or tapper was enabled to reverse the polarity of the circuit to indicate the dot or dash. This reduced retardation in the circuit (extending its viable length), simultaneously reducing the battery power and the number of relays required. Used originally for underwater and underground lines where retardation was a critical issue, it was applied to the Company's overhead domestic long-lines in Britain using the American telegraph. From 1854 no other land circuits were as efficient as those of the Electric Telegraph Company.

In the next year, 1855, Varley perfected his 'translating' apparatus for the American telegraph. This enabled, for the first time, consistent transmission of messages over the longest circuits from point-to-point by the introduction of sophisticated automatic relays. An example cited a message routed from Windsor Castle in southern England to Balmoral in northern Scotland. On being keyed in Windsor it was first 'translated' at York, then in Edinburgh, then finally in Aberdeen before the printer marked the tape, almost instantaneously, in Balmoral. The new 'translator' was installed at Amsterdam on the cables to Holland, converting the English electrical system to the simpler European circuits automatically, so enabling direct messaging between London and Frankfurt and Berlin.

The new word *telegram* was to gain popular countenance during 1856 and in subsequent years; although the expression was first noted approvingly by 'Jackson's Oxford Journal' on July 17, 1852. 'The Times' newspaper first used the word only on September 14, 1857 quoting messages relating to the mutiny of troops in India. Its popular acceptance was brought about primarily with the widespread appearance of the by-line "Reuter's Telegram" on many newspaper articles on foreign subjects from 1858.

In March 1856 the Queen's Speech on the opening of Parliament, totalling 701 words, was sent from Founders' Court to Amsterdam, using the American telegraph for the first time. It travelled a distance of 321 miles by overhead wire alongside the Eastern Counties Railway to Lowestoft, the International company's cable and its wire from the Hague, and was printed, in just 20½ minutes. The telegraph clerk in London was an eighteen-year-old girl who transmitted at a speed of nearly thirty-five words a minute. Two words had to be corrected by interchange of signals, all within the time specified.

With the formal end of the war with Russia, effected by the Treaty of Paris on March 30, 1856, the Company's continental connection through Holland and Prussia was speedily restored. By May 5, 1856 a new direct circuit had been opened between London and St Petersburg; at 1,700 miles it was the longest line of telegraph then in existence.

On April 23, 1856 the Company used the steam tug *Wilberforce* to lay a two-mile cable across the Humber river, between Hull and New Holland. This was to form part of a long line from Hull to Grimsby and Peterborough through to London to be opened by mid-May.

On October 8, 1856 W F Cooke hosted a dinner for the visiting "electrician" S F B Morse at the 'Albion' Tavern at 153, Aldersgate Street, in the City of London. Attending the event were Lord Charles Clinton, Sir James Carmichael, Charles Fox, General William Wylde CB, Dr William O'Shaughnessy, Rowland Hill, Cyrus Field, John Watkins Brett, Charles Tilston Bright, Edward Bright and Thomas Crampton; important and pioneering figures in engineering and telegraphy from Britain, America and the empire. But other than Cooke and Wylde, no one attended from the Electric Telegraph Company, such was their opinion of the American gentleman's

pretentions.

Morse's visit was connected with the promotion of the Atlantic Telegraph Company and the first intercontinental cable, between Europe and America. The Electric took a cautious view of this immense project; none of its directors or its technical staff were involved in its projection, and its management had their own opinions on the viability of underwater circuits.

Coincidentally, the 'Albion' Tavern, run by John and Thomas Staples, "purveyors of turtle", was the venue for the semi-annual dinner held by the directors after the shareholders' meeting of the Electric company.

The Electric Telegraph Company reported in January 1857 that it possessed 5,398 miles of line, 28,627 miles of wire requiring 136,000 poles, and 2,121 instruments with 653 bells. It advertised in 1857 that it has circuits along at least some of the lines of the following sixty-three railway companies: Aberdeen; Bangor & Carnarvon; Birkenhead, Lancashire & Cheshire Junction; Birmingham, Wolverhampton & Stour Valley; Bristol & Exeter; Buckingham-shire; Caledonian; Chester & Holyhead; Deeside; Dublin & Drogheda; Dundee & Arbroath; Eastern Counties; Eastern Union; Edinburgh & Glasgow; Edinburgh, Perth & Dundee; Forth & Clyde Junction; Furness; Great Northern; Great North of Scotland; Great Western; Hereford, Ross & Gloucester; Hull & Holderness; Lancashire & Yorkshire; Lancaster & Carlisle; Lancaster & Preston Junction; Lancaster & Skipton; Leeds & Bradford; London & Blackwall; London, Brighton & South Coast; London & North Western; London & South Western; London, Tilbury & Southend; Manchester, Sheffield & Lincolnshire; Maryport & Carlisle; Midland; Monmouthshire Railway & Canal; Newmarket; Newport, Abergavenny & Hereford; Norfolk; North British; North Devon; North London; North Staffordshire; North Union; North Western; Northern & Eastern; Oxford, Worcester & Wolverhampton; Perth & Dunkeld; Port Carlisle Dock & Railway; Scottish Central; Scottish Midland; Shrewsbury & Birmingham; Shrewsbury & Chester; Shrewsbury & Hertford; Shropshire Union; South Devon; South Eastern; South Staffordshire; South Wales; Taff Vale; Vale of Neath; Whitehaven & Furness Junction; and the West Cornwall. On the Caledonian and Dublin & Drogheda railways the circuits were limited to short branches. At that moment there were 243 separate domestic railway companies of varying sizes and states of organization.

With the consolidation of the competitive lines in January 1857 into the *British & Irish Magnetic Telegraph Company*, as the second wholly national network the Electric launched a widespread press advertising campaign in the new firm's northern heartland. It emphasised its much larger number of stations in Britain.

The Electric Telegraph Company
Growth 1850 – 59

Year	Miles of Wire	Stations	Staff	Messages
1850	7,046	257	-	64,734
1851	9,400	224	-	99,216
1852	15,737	207	-	211,137
1853	20,588	338	-	345,793
1854	23,570	420	1,281	572,216
1855	27,719	404	1,131	745,880
1856	28,875	423	1,114	812,223
1857	29,613	460	1,201	881,271
1858	31,144	519	1,305	870,143
1859	31,678	552	1,594	1,025,269

These figures, and those for profits, are all taken from a Parliamentary report prepared at the end of 1860. (Corrected January 2008)

The chairman, Robert Stephenson, reported in 1859 that the first generation of its submarine cables was decaying and due to the shallow nature of the German Bight were vulnerable to anchor-damage. He noted that some lasted five years, others ten. The Electric had spent £140,000 on these continental and domestic cables, and would henceforth set aside £14,000 a year to enable their complete renewal over a ten year cycle. It had had a policy of sponsoring domestic cable companies, but still had to maintain and periodically re-lay its own foreign wires to Europe by way of Holland.

A new exceptionally heavy underwater cable with four cores was laid by the Company between September 19 and 21, 1858 from Dunwich at Orfordness to Zandvoort in Holland to replace its original four lightweight circuits, which had suffered repeatedly from ships' anchors. It was engineered by Latimer Clark and manufactured by Glass, Elliot & Company. The four old cables were then raised to recover the copper cores for scrap and reuse. Foreign traffic was of such importance that the Company had to lay another heavy four-core cable between Lowestoft, and Zandvoort in 1862; this too was made by Glass, Elliot. The change of landing place to Lowestoft was found necessary as Dunwich was a major roadstead for anchoring ships, which caused damage even to the new heavy shore end cable.

The first Zandvoort cable was enveloped in drama and incident, with accusations of industrial sabotage.

In the Guildhall Court in London, on February 20 and 21, 1861, Glass, Elliot, the makers of the Company's heavy cable between England and Holland of 1858, sued George Boswall, London agent of R S Newall, its chief competitor, for damages. Boswall was accused of engaging a man named Curtis to accompany the cable-laying expedition to drive a series of iron nails into the cable to destroy its insulation on submersion.

Curtis admitted his actions to the court, but Boswall's plot was only partially successful, just one of the four cores was penetrated. His damage cost the Company something like £4,000 to £5,000 in attempts to repair.

Newall left the submarine cable business in 1860. The Atlantic cable of 1858, and several others that his firm had manufactured for the Mediterranean Sea and Indian Ocean, failed, at huge cost to their promoters.

The old single-core cables were not wasted. When the Company's two Dublin cables failed in 1859 they were replaced in 1861 by its ship *Monarch* laying a single circuit using Newall's salvaged material from 1854 and 1855. This, too, lasted four years...

The Prince of Wales visited the Central Station at Founders' Court on February 21, 1857, being shown around by the directors Thomas Critchley, Mark Philips and Richard Till. His Royal Highness, the newspapers noted, was particularly "attracted to the direct communication with Hamburg, Berlin, Vienna, &c."; possibly contemplating messages to and from his many royal relatives in the German states. The Prince was to join his Royal mother in having a private telegraph installed at his residence.

Due to the direction and nature of their business the clerks in the Foreign Gallery commonly were of German origin and spoke German among themselves. Their traffic in October 1857 reached out to Hamburg, Berlin, Vienna, Trieste, Stettin, St Petersburg, Moscow and even Kiev. On May 2, 1858 a direct circuit to Constantinople in Ottoman Turkey was opened for the first time. The response was in French as they then controlled the telegraphs there.

The Company ventured northwards in Britain with a new telegraph office and news-room in Inverness, at the eastern end of the Great Glen in the north of Scotland, on June 28, 1859. The citizens of Inverness had lobbied for the telegraph since November 1856 but had to wait for the opening of the Inverness & Aberdeen Railway, and the wayleave it offered the Electric company, to have access to foreign parts, such as England and the Continent. This was to be the farthest north that the Company's circuits reached for nearly ten years.

The Electric Telegraph Company had an authorised capital of £1,148,000 of which it had called-up £827,885 in 1859. The latter half of the 1850s had seen its greatest level of investment, so that in 1859 it had 32,499 miles of wire, 552 stations, of which 37 were in London, and carried 1,025,269 messages, employing 1,594 people.

By February 1859 the Electric & International Telegraph Company outgrew its handsome Central Station at Founders' Court and offices in Moorgate Street, moving its secretary's, accounting and engineering departments, with a new telegraph gallery for clerks and instruments, a few hundred yards north to a new building, its *General Offices*; a tedious three-storey-and-basement, ten-window wide brick building on the northern side of Great Bell Alley off Moorgate Street.

The Company had 200 employees there in 1868, over half of which were women clerk-operators. It was, remarkably, next adjacent to the office that W F Cooke had once occupied in the 1840s at Copthall Buildings. The architect was the same Henry Arthur Hunt who had designed their Founders' Court premises, now elevated to the position of Surveyor of Her Majesty's Works and Public Buildings, with chambers at 4 Parliament Street, Westminster, rather than lowly Lambeth.

The pneumatic tubes from the satellite offices at Mincing Lane, Cornhill and the Stock Exchange, as well as a new line from Founders' Court, were brought together at a single station in the General Offices, and a further internal "air circuit" added to transmit documents and even small packages from room to room between departments.

The Telegraph Gallery
The lady clerks at the new General Offices at Telegraph Street in 1859
They are working single- and two-needle instruments and
American inkers
Click on the image for a larger view, click on Previous Page to resume

The 'Illustrated London News' in 1859 gave a comprehensive description of the new General Offices:

"Messrs Hunt & Stephenson have had to apply architecture to the novel requirements of the telegraph, and have, for the sake, principally, of obtaining light, extended this great telegraphic gallery over the whole top of the building."

"It is well known that the cause of female labour owes much to this company. The directors have developed a new branch of female employment, and one which appears admirably suited to their capabilities and comfort. The foreign gallery in this building is worked by male telegraphists, nearly all foreigners; but the great gallery, in which the telegraphic business of the United Kingdom is performed, is worked solely by young females. There are, at the present time, ninety-six or ninety-seven young ladies engaged daily; and, apart from the telegraphic requirements in the gallery, every arrangement appears to be made for their comfort and privacy."

"It may be interesting to give the dimensions of this unequalled telegraphic gallery: The room is about eighty feet in length, thirty feet in width, and thirty feet in height. It is lit from the roof with a steady northern light, and by large windows at the sides and ends: these serve also for ventilation. Two large sun burners (ceiling gaslights and air-extractors) are provided, and a gaslight with shade to each instrument."

"Adjoining this room is the foreign department, thirty-one feet by twenty-four feet."

"The male and female telegraphists have separate staircases to gain their respective offices: that for the men leads from the principal staircase. The female clerks have a private staircase, leading from their large room direct to the street-door of the premises. By this staircase also they descend to a dining-hall and cloak-room, which

are provided exclusively for them. The ground floor is occupied by the sending-out offices and superintendent's room. The secretary's offices and the board-room are on the first floor."

Remarkably, the Company persuaded the district's municipal authority, the City Corporation, to rename the alley, Telegraph Street; so that its formal headquarters' address became 12 – 14 Telegraph Street.

Of course, all of the metropolis' underground electric circuits had to be diverted to originate at Telegraph Street: these in 1859 were 1] west to Paddington railway station by way of Gresham Street, Holborn and Oxford Street; 2] south-west to Westminster and Parliament by Fleet Street and the Strand; 3] south to the Borough (Union Street, Southwark) via London Bridge railway station; and 4] north to the Angel, Islington along the City Road, past Euston Square and King's Cross railway stations. From these conduits, the two other vital underground trunks ran 5] from Finsbury Square eastwards to Shoreditch railway station, and 6] the very first subterranean cable, south from the Strand to the Waterloo Bridge railway station.

A correspondent of 'The Telegrapher' magazine of New York added his observations on the Company's General Offices in May 1, 1867:

"The largest and most extensive telegraph station in the world... is anything but an imposing or creditable specimen of the architecture of the nineteenth century. It appears to have no design or plan in particular, but consists of an irregular conglomeration of dark passages, staircases with sharp angles, ill-shaped and worse proportioned rooms, and doors placed in all sorts of uncomfortable positions, and without the slightest attempt at finish or decoration, and the whole rendered, if possible, more dismal by the faint, sea-sick looking green, with which favourite colour passages and rooms have one and all (apparently not very recently) been painted." [*The charm of S F B Morse was apparently still alive and well.*]

"The most remarkable features about the establishment are, of course, the operating rooms, which are situated at the top of the building. There are but two rooms, the largest containing about eighty instruments, principally Digney's ink-marking registers, with Siemens' improvements, together with a few needle instruments. All these instruments are worked by young ladies. They appear not only to be well-fitted for the work, but the employment seems to suit them; for they chat and read and work while waiting at their instruments for a message, and seem, altogether, very merry."

"The instruments in this room are entirely devoted to the English circuits."

"The smaller room, called 'the Continental Gallery,' is devoted to the Continental and other important submarine lines. Here all the instruments, about twenty in number, are worked by young men. The lines are now worked through direct to the Dutch Government offices in Amsterdam. Direct communication is, however, daily kept up to towns far beyond that point, the lines being switched through at Amsterdam to such towns as may be required, from day to day. Berlin being an important telegraphic point, one wire is kept constantly through to the office there, so that all messages destined for that city, or points beyond, are sent to Berlin direct. Frankfort is nearly always, in a like manner, communicated with direct, the wires being 'put through' at Amsterdam as occasion requires. Constantinople and St. Petersburg are also frequently spoken with direct, though not as a general rule."

"On the English circuits, Edinburgh is now always worked with direct, and as twenty years ago it was considered a feat to work through fifty miles, some idea may be formed of the improvements that have since been made in the insulation of these wires."

"The batteries for all the instruments, both for the main and local circuits, are kept in the cellars underneath the building. The Muirhead battery - a modification of Daniells' - is employed, no less than *nine thousand cells* being in use in this station. The combined length of wire within the building is over thirty-five miles."

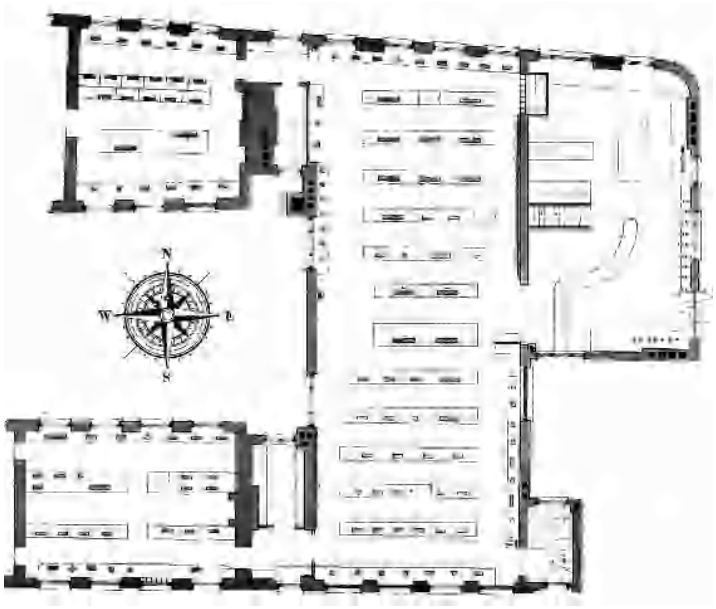
"Mr Latimer Clark [had] introduced the pneumatic system, by which the message papers are, as it were, sucked through a lead pipe from some of the nearer metropolitan stations to the central station, whence they are telegraphed on in the usual manner. By this process messages could only be sent to the central station, the plungers which contained the messages having to be carried back by messenger. Mr Varley added the employment of a plenum chamber, and pressure to send messages

from the central station."

"The apparatus consists of a wrought-iron vacuum-chamber, five feet in diameter, and ten feet high. A twenty horse engine works an air-pump, which constantly exhausts air from this chamber, and another pump pumps air into the plenum chamber. Lead pipes, 1 5-8 inches in diameter, for the shorter distances, and 2 1-8 [inches] for the longer distances, are encased in cast-iron pipes underneath the streets. A small plunger or carrier, consisting of a cylindrical box of gutta-percha, open at one end, and the edges of which just fit the pipe, carries the message papers. When a carrier has to be sent, the station signals by telegraph to the central station, and the pipe is turned in to the vacuum chamber, and the carrier arrives and is taken out through a door in the side of the pipe. In sending carriers from the central station the pipe is turned into the plenum chamber. There are several ingenious details in the arrangement."

"The time of transit varies according to the number of pipes open at the same time. There are seven of them in all, the largest being nine hundred and eighty yards, or a little over half a mile in length. The time of transit for this distance is from forty-five to sixty seconds."

By 1870 there had been some alterations to the General Offices; in the later 1860s east and west wings were added to the building. The basements then contained the engine room, the messengers' waiting and dining rooms and the stores; the ground floor, the offices of the station manager, the accountant and the engineers; the first floor, the board room, the secretary's offices and the intelligence department; the second floor, the dining rooms for the male and female clerks, and the third floor, the instrument galleries for the receipt and transmission of messages. The Anglo-American Telegraph Company and the Indo-European Telegraph Company then both leased rooms for their instruments, connecting with America and India respectively.



The Third Floor Plan showing the Instrument Gallery of the Electric Telegraph Company's General Offices on the north side of Telegraph Street
By 1870 East and West wings had been added, the "air circuits" or pneumatic tubes are in the East wing

The General Offices had no counters for taking in messages, it was, in the Company's language, a "transmission station" through which messages to and from all of its London offices passed; Founders' Court in Lothbury was to remain to the end its largest and most profitable public office, originating over one-third of the Company's annual income. It even had a small Post Office for letters adjacent to its main hall, replacing the old "Founders' Arms" public house.

The complicated freehold and leasehold arrangements of the Founders' Court premises were finally rationalised in 1863. The building and the connected house in Moorgate Street were sold for £5,839 and the ground rent reduced by £800 per annum. The Company only retained the great public hall as its Central Station, the upper floors being taken over by offices for merchants and brokers. All of the electrical apparatus had then been moved to Telegraph Street and connected by

pneumatic tube to the public counters in Lothbury.

Electric Telegraph Company - Statistics

Message Analysis.....1860.....(1868)*
1s 0d.(within London) .....01.10%.....(55%)
1s 6d.....21.70%.....(30%)
2s 0d.....15.90%.....(10%)
3s 0d.....13.11%
4s 0d.....31.00%.....(5%)
5s 0d.(to Dublin).....00.90%
Foreign.....11.30%
Miscellaneous.....04.70%

Message Revenues 1859
Messages, home.....£ 113,886 .2s.9d
Frank stamps.....£ 19,777.0s .9d
Intelligence.....£ 11,685.13s.2d
Messages, foreign.....£ 33,219 .0s.0d
Railway maintenance.....£ 25,956 .3s.8d
Other.....£ 3,470.1s.7d
Total.....£ 202,994.1s.11d

Annual Circuit Revenues 1860
London – Liverpool.....£ 10,612 19s 8d
London – Manchester.....£ 6,334 9s 4d
London – Birmingham.....£ 2,481 0s 0d
Liverpool – Birmingham.....£ 462 0s 0d
Manchester – Birmingham.....£ 147 0s 0d

From a confidential report from Mark Huish to Robert Grimston in October 1860
(*Parliamentary Report 1868, 1s 0d rate within 100 miles, 3s 0d and 4s 0d to Ireland)

Organisation & Structure
The Electric Telegraph Company was organised in geographical Districts each under a District Superintendent assisted by an Electrician and a Cashier, managing a corps of Inspectors, Mechanics and Linemen. The Superintendent also had responsibility for any construction works in their area. The Superintendents reported weekly and monthly to Moorgate Street and met together each quarter to address management and technical problems. The Districts were based on responsibility for between 250 to 500 miles of line. Originally these were founded on and designated by the largest cities and railway companies, however by the end of the 1850s they had consolidated into nine administrative areas:

- Northern District, York
- South Western District, Southampton
- London District, Central station
- Midland District, Derby
- Western District, Bristol
- Scottish District, Edinburgh
- Eastern District, Norwich
- North Western District, Liverpool
- Irish District, Dublin

There was also a Submarine Electrician of District responsibility overseeing the new cables, based in Lowestoft, on board the Company's cable-steamer, the *Monarch*, and a large stores department.

Each District comprised several Divisions; from four to six telegraph stations in their own circuit, of from fifty to a hundred miles length. At either end of the circuit was a so-called transmission station in a large office which connected to the separate long-lines that paralleled the Division wires. Messages in and out of the Divisions were switched or transcribed at these points.

The Districts each employed six or so Inspectors of Division, a Mechanic to maintain the apparatus, sixteen or so Linemen looking after the insulators and overhead wires

and around forty Labourers. The number of labourers in service varied widely, dependent on construction and maintenance needs.

Management had a flat hierarchy: the Board of Directors, the Secretary & Manager, the District Superintendents and Clerks-in-Charge of stations; supported by accounting, electrical and engineering staff. There was also the corps of Inspectors that visited offices and stations to record problems for head office. It employees, whether clerks, mechanics or messengers, worked long hours, as it had a policy of paying overtime rather than taking on more people.

In 1868 the annual salaries of senior members of staff, indicating their importance to the Company, were:

- Henry Weaver, Secretary and General Manager, £1,600
- C V Boys, Superintendant of the Intelligence Department, £775
- Henry Schütz-Wilson, Assistant Secretary, £575
- W T Ansell, General Superintendant in Ireland, £406
- Benjamin Sutterby, Sporting News Reporter, £400
- John Muirhead, Superintendant of stores, £360

To these can be compared the retainers for:

- Latimer Clark, consultant engineer, £100
- Cromwell Varley, consultant electrician, £200

These two would, in considerable addition, earn fees for work that the Company commissioned of them.

Message charges were now going down and efficiencies increasing - during 1855, the average cost of the Electric's messages was 4s 1¾ d, of which working expenses were 2s 7d; in 1868 the average cost was just 2s 0¾ d, with working expenses reduced to 1s 0¼ d.

The Last Decade
The Company approached the French government in 1859 with an offer to lay a new cable across the Channel between Newhaven and Dieppe, guaranteeing a low tariff. This was done to break the monopoly concession of the Submarine Telegraph Company between France and Britain, which was then renegotiating its rights in Paris. The French rejected the proposal but compelled the Submarine company to make the new cable instead.

Electric Telegraph Company
Profits 1850 - 1859

Year	Gross Revenue	Dividend
1850*	£ 43,523	4%
1851	£ 49,866	6%
1852	£ 67,525	6½%
1853	£ 104,185	6¾%
1854	£ 123,231	6½%
1855	£ 144,928	6%
1856	£ 165,776	6½%
1857	£ 180,734	8%
1858	£ 177,638	6½%
1859	£ 201,674	6¾%

The drop in profits after 1857 can be explained by the American financial panic of that year brought about by outrageous speculations which had Atlantic trade at a new low for a couple of years.

* The year 1850 figures as published by the Company; otherwise they are from government returns.

By 1860 the Electric Telegraph Company's paid-up capital had reached £827,885, consisting of £719,900 in consolidated stock and £107,895 from an issue of 7,199 new £25 shares, on which £23 was paid-up. This had been applied to its expansion in

land lines and, particularly, in domestic and continental underwater cable circuits. Its income in that year was £4,000 per week, up from £100 a week ten years previously.

On July 31, 1860 the Company contracted to erect a private wire from the city of Aberdeen to the Queen's new residence in Scotland at Balmoral Castle.

It also opened its own telegraph office in Hamburg on August 9, 1860. This, managed by Henry Ree, was at 5 Arcade, in the Hamburg Bourse or Exchange. As one of the Hanse cities Hamburg was, at that time, independent of the telegraph systems of the surrounding German states, and one of Europe's largest trading ports.

In June 1861 George Warren, a twenty-two year-old telegraph clerk in the Electric company's service, was attached to the Royal Household. On July 30, 1862 he was appointed *Court Telegraphist*, a position he held until his death in 1896, transferring his employ from the Company to the Post Office in 1868.

The Company also maintained from 1861 a station with a clerk and apparatus within the Foreign Office at 7 Whitehall Gardens, Westminster. This received and sent government diplomatic messages on the Company's international circuits. The Foreign Office had a running account with the Electric company, settled monthly. Neighbouring government departments, the Home Office, the Treasury and others, also used the services of the Whitehall Gardens telegraph but they had to pay the clerk cash, like any other customer!

In a rare addition to its basic annual reports to the Board of Trade in December 1861 the Company stated that it had 123 separate agreements with railway companies and public bodies; these included free transmission of their business messages. The messages were said to be *three times* the volume of its public traffic!

It was ruthless in trying to prevent the introduction of cheap rate competition at this time. The Electric placed all manner of legal obstacles in the way of the creation of the United Kingdom Electric Telegraph Company in 1861. It challenged the United Kingdom's right to roadside lines in the Courts and even had its railway allies prevent its wires crossing their tracks. It recruited additional support from the Magnetic company and even the Rothschild family to harass and physically obstruct the building of these competing lines.

This final period was marked by external events that affected all of the telegraph companies. There was a fratricidal war in America, which generated huge public interest in Europe – requiring special resources for news-gathering. In Britain there occurred a Little Mania from 1862 until 1866; speculation in all manner of joint-stock enterprises, with a second burst of railway promotion, although the most profitable lines had been built; there was now a lot of money available for investment. Internationally, flaws were appearing in the stability of Europe, with wars consolidating the German and Italian states, and the fragmentation of Turkey, requiring new routes for secure electric communication to India and the east rather than the most direct.

By 1860 the Company had started to rely on the Cooke & Wheatstone single-needle apparatus, although many circuits retained the two-needle apparatus to the end. It had then also adopted the American telegraph, the key-and-inker, initially on its foreign circuits to Holland, and by that year also for its long lines in Britain, connecting London, Manchester, Glasgow, Edinburgh and Aberdeen, slowly replacing the Bain writer. It also used the American telegraph on its long line and cable to Dublin in Ireland.

During 1861 it replaced its large *Franked Message* stamps with small *Telegraph*

Stamps similar to postage stamps, portrait proportioned in eight denominations for domestic traffic, and landscape in three prices for continental messages. These had to be used on the Company's message forms that had the rules and regulations on the reverse.

The Company then had 6,727 miles of line, 32,787 miles of wire and 772 stations with 3,529 instruments in use.

At a public Telegraphic Soirée or exhibition organised by the British Association for the Advancement of Science attended by 3,000 people in the Free Trade Hall, Manchester on September 7, 1861 the Electric & International Telegraph Company demonstrated the potential of their continental circuits. At 8 o'clock in the evening their clerk in Manchester connected with the station at The Hague in Holland, at 8.10 he was in conversation with Hamburg, at 8.20 Berlin was in circuit. At 8.51 he was exchanging pleasantries with St Petersburg, and then at 9.05 with Moscow. A connection was next tried onward to Odessa on the Black Sea coast, 2,200 miles away from Manchester by way of Berlin, St Petersburg and Moscow and messages exchanged at 9.17. All this amicable 'talking' was done directly, using the American telegraph and C F Varley's automatic relays.

In preparation for the exhibition the Company had organised a direct circuit from Founders' Court to Taganrog in south Russia on Sunday, August 25, 1861. The city of Taganrog was the centre of the wheat trade, then of considerable importance to Britain. It covered a distance of 2,500 miles – the longest yet achieved.

This Telegraphic Soirée, in which the Magnetic and Submarine Telegraph companies participated, also allowed the Electric to demonstrate its historic family of instruments; Cooke & Wheatstone's double and single needle, Bain's chemical printer and the American telegraph, as well as to show a twenty-four-year-old section of Cooke & Wheatstone's very first line between Euston Square and Camden Town. It put the instruments in touch with Balmoral, Falmouth, Aberdeen and The Hague in Holland. The Prince Consort personally responded to the message to Balmoral, wishing the Soirée well.

During the night of January 6, 1862 a direct telegraphic link was made between Founders' Court in London and Smyrna in Ottoman Turkey, courtesy of the German-Austrian Telegraph Union. It had a complicated route. The *königliche Staatstelegraphenbureau* in Leipzig, Saxony, co-ordinated the connection; it went from London to Amsterdam by land and cable, then overland through Hanover, Prussia, Saxony, Bohemia, Moravia, Galicia, Moldavia, Wallachia, Turkey in Europe and Greece, going submarine at Cape Hellas to Scio (Chios) hence by cable to Smyrna! The connection was maintained for a half-hour and 3,000 characters sent and received. It is interesting to note that both ends of this 'circuitous circuit' were in the hands of English firms, the Electric in London and the Levant Submarine Telegraph Company on Scio.

By 1864 the Electric was able to "talk" directly with Omsk in Siberia from Telegraph Street, 3,000 miles distant, by way of Berlin and St Petersburg; Varley's relays then introducing "fresh electricity" every eight hundred miles on the long lines in Prussia and Russia.

During 1862 the Company's profits from domestic circuits were severely affected by cut-price competition, to the extent of "several thousand" pounds. This was only compensated for by opening 167 new offices, mainly at railway stations, to generate additional revenue, and by increased, hugely profitable foreign traffic. In January 1862 the Board approved participation in a new cable from South Wales to Ireland for traffic to America and to Cork and Queenstown, the active ports of Southern Ireland. This was to be carried out by a subsidiary, the *London & South-of-Ireland Direct Telegraph Company*. The line was rapidly completed in March 1862.

For the first time this allowed the Company to open offices in Ireland, other than in Dublin. In December 1862 it listed telegraphs at Cork, Dublin, Duncannon (Wexford), Dungarran (Waterford), Passage, Roche's Point, Waterford, Wexford, Youghall and Queenstown. With the exception of Dublin these were all on the South-of-Ireland company's land line from the cable end to Cork. Messages between the southern towns and Dublin were sent via England!

In 1863 labourers working on the rails leading to the eastern side of the London & North Western Railway's terminus at Euston Square uncovered sections of Cooke & Wheatstone's wooden battens containing the original five wire circuit of 1838. Pieces

were immediately carried off to sit in a place of honour in the Electric Telegraph Company's boardroom in Telegraph Street. They were to be displayed alongside examples of the earliest apparatus devised by Cooke & Wheatstone and others used by the Company from its beginning.

Throughout the 1860s there was a special effort to reduce costs. By the end of the decade on the most in-tensely worked circuits between London and the cities of the north, starting with Newcastle-on-Tyne in July 1867, the Company mechanised its traffic using the automatic equipment devised by Wheatstone in 1858: several clerks could prepare messages on punched tape to continually feed one high speed circuit.

It also introduced small switchboards, called at the time *umschalters*, from their Prussian origins, to manage connections between its increasingly complex network of circuits, and Varley's more sophisticated electrical relays, also known as 'translators' or 'condensers', on its longest circuits eliminating the need for manual transcription.

With the exception of its 'invisible' underground circuits in large towns and cities the Electric's lines were once again overhead wires on poles. The increasing number of close parallel wires on its most valuable routes was found to affect the efficiency of its circuits, in the short-term this was addressed by increasing the number of cells used.

Memoriam
J Lewis Ricardo, the first Chairman of the Company, died in August 1862, aged 50: the offices of the Electric, Magnetic and District telegraph companies closed for a day and their flags lowered to half-mast in commemoration of his services in founding their new industry.

The Board of Directors in mid-1862 consisted of the Hon Robert Grimston, chairman, Mark Huish, deputy-chairman, G P Bidder, Thomas Brassey, the Earl of Caithness, W F Cooke, T Critchley, William Dunlop, John Hawkshaw, E R Langworthy, Frederick N Micklethwaite, Mark Philips, Lord Alfred Paget MP, W H Smith MP, Richard Till, Joseph Whitworth, and Major-General William Wylde CB. This mass of seventeen compares with the original board of five in 1846.

The Company's final years showed only a gradual expansion of its domestic lines; it concentrated on creating foreign connections - especially towards the East. As will be seen, it abandoned the combating of competition in the courts for creating alliances in fixing charges and services with the 'enemy'. The telegraph companies in their maturity began to co-operate in so many ways, such as pricing and news supply, that there appeared to be a virtual monopoly, against the public interest. In this the Electric as the dominant concern customarily took the initiative.

The Electric Telegraph Company's domestic preoccupation from 1862 was its belated expansion into Ireland from its cable-end at Dublin. It had replaced its underwater circuits after damage in 1861 with a new single core cable, moving the 'English' end from the port of Holyhead on Holy Island to Rhosneigr on the main body of Anglesey island, where it was less vulnerable to anchor damage and close to the Chester & Holyhead Railway which carried the Company's inland circuits. As it was to transpire in Ireland the Company had to erect poles along the Grand Canal from Dublin to reach Athlone and Galway, along the Barrow Navigation, south from the Grand Canal, to reach Carlow and Waterford, and along the Royal Canal from Dublin, to reach Mullingar and Longford, hence by the Ballinamore & Ballyconnell Canal, the Ulster Canal and the Lagan Navigation to reach Belfast. In Ireland the Company did not have instruments at railway stations; even by 1855 they were already occupied by competitive telegraph companies.

In the south of Ireland these lines eventually connected with its small network based on Cork, formed in the summer of 1862 by the London & South-of-Ireland Direct Telegraph Company.

To achieve its objectives in John Bull's other island the Company appointed William Thomas Ansell to be its General Superintendent and Engineer, a unique grade in its hierarchy, for Ireland. Ansell had worked for the Company since 1846, eventually becoming District Superintendent for the North-West in Liverpool, before taking a break between 1858 and 1861 to advise R S Newall & Company on their cable works in the Levant. In his new job he successfully and speedily organised the network of canal-side circuits that connected the island's principal cities, challenging the Magnetic company's local monopoly for the first time.

Almost an Empire

Suddenly, in 1862, the attention of the Electric & International Telegraph Company was drawn to places five thousand miles away from its home in London. In the Far East the transfer of the East India Company's telegraph to the government in 1858 had been less than satisfactory. Public service was a minor consideration, messaging was slow - taking several days to cross the sub-continent, privacy was minimal, message costs high and, as with the state systems of continental Europe, the poorly-trained, poorly supervised staff was overwhelmed by bureaucracy and by the volume of government messages that had absolute priority. Its circuits were, by and large, along dirt roads or across country, so subject to poor maintenance and reliability.

The government telegraphs extended to 14,500 miles and cost £1,146,861 by April 1864. The average message charge on the India telegraph monopoly in 1860s was 10s 0d; whilst in Britain, on the Company's circuits, it was 2s 0d.

By 1862 there was an alternative: British-financed railways were spreading over India each of them having self-contained line-side telegraphs for traffic control, for their own messaging and for public messages, licensed by the government. The railways of India by 1864 had 3,141 miles of telegraph line, which had cost them £411,924 to erect.

Early in 1863, the chairman of the Electric, Robert Grimston, and the deputy chairman, Mark Huish, the former general manager of the London & North-Western Railway, projected the *Oriental Electric Telegraph Company* to extend the Electric's business model into the heart of India. The Oriental was to construct new wires, not exceeding six circuits, alongside of the railways at its own cost and pay the railway 40s 0d per mile a year for 21 years, installing its own apparatus, paying also 10% of the cost of iron posts and 25% of wood posts per annum provided by the railway. If necessary it would acquire the railway's entire telegraph works at cost. The railway companies would share the profits from the public telegraphs and each would provide a director and the Electric two directors to manage the scheme.

The engineers were the experienced and authoritative Charles Bright and Latimer Clark. They proposed to adopt the American telegraph, with key and printer, rather than the American "sounder" or acoustic telegraph used on the government lines, for reasons of accuracy, security and privacy.

The Oriental Telegraph Company, by which title it was also known, had first been promoted by the British-Indian railway companies with a prospectus on July 19, 1859. It was then something of a forlorn hope against the state monopoly. But the service offered by their telegraphs was so appalling that on January 15, 1862 the government in India unilaterally invited commercial interests to offer an alternative. This immediately led to the directors of the Electric Telegraph Company in London to seize on the vast new opportunity that India offered...

During April 1863 the East Indian Railway (with 1,078 miles of telegraph line), the Great Indian Peninsula Railway (781 miles), the Madras Railway (532 miles), the Great Southern of India Railway (79 miles), the Eastern Bengal Railway [including the Calcutta & South Eastern Railway] (138 miles) and the Bombay, Baroda & Central India Railway (185 miles), all except one of the railway companies in India, had agreed to the terms proposed by the Oriental company.

Together these connected the major cities of Agra, Ahmedabad, Allahabad, Bombay, Calcutta, Calicut, Dacca, Delhi, Hyderabad, Madras and Nagpur, offering 4,000 miles of telegraph line to the Oriental company. The exception, the Scinde Railway (which included the Punjaub Railway), was isolated from the others in the west of the country. All of these companies were organised in London and shared directors and shareholders with the major British railways.

The Oriental company intended initially to link the two principal cities of India, Bombay and Calcutta, by way of the Great India Peninsula Railway and the East Indian Railway. This would span the sub-continent from west to east and connect with the new cable to the Persian Gulf and onward to Europe.

However, whatever the authorities in India might have thought, the government in London decided on September 1, 1864 that a competitive public telegraph in that country was "not desirable". Unlike in Britain where the railway companies were wholly independent, in India they worked within a system of government concessions and interest guarantees; the railways had to listen to the government's

opinion, working their telegraphs under license.

The Oriental Electric Telegraph Company despite its robust parentage was abandoned; but the Electric company had now set its eye on India and a few years later was to successfully create a 6,000 mile line of wire from London to Calcutta though its child, the Indo-European Telegraph Company.

The German-Austrian Telegraph Union
Established in 1850 it eventually included Austria, Prussia, Holland,
the German Confederation, Russia, Turkey and most of the Italian states
in co-operative circuits
The Electric Telegraph Company was a semi-official member

The Electric Telegraph Company was coy in regard to its relationships with foreign systems. All it would say publicly was that it was in connection with the German-Austrian Telegraph Union through its Holland cables and that the Dutch government's *Rijkstelegraaf*, a member of the Union, represented its interests on the Continent, collecting and paying-out message money on its behalf. Its Assistant Secretary, Henry Schütz-Wilson, and its engineers, such as Henry Pomeroy, also regularly visited the *Rijkstelegraaf* offices in Amsterdam to enable closer co-operation. In a reciprocal manner, *Rijkstelegraaf* engineers, such as J J van Kerkwyk, were allowed to tour the Company's circuits. The Chairman of the Company made it clear to Parliament in 1866 that it was satisfied with its relationship with the Union as regards both service and tariffs. In addition, he revealed that the Company had permanent direct circuits from London to Berlin and Frankfurt, by way of Amsterdam, leased from the Union.

Whatever it said publicly, it had also developed strong relationships with the telegraph administrations of Prussia and Russia; from Frankfurt it worked a direct night circuit to Constantinople in Ottoman Turkey and from Berlin onward to St Petersburg in Russia – the Ottoman and Russian governments both subscribing to the German-Austrian Telegraph Union. Its Assistant Secretary was visiting Berlin and St Petersburg in the 1860s in addition to Amsterdam, and from these negotiations it was allowed to establish ever longer uninterrupted direct circuits from London, reaching east beyond the Urals towards India and China, if only experimentally and during the night hours when local traffic was light.

The success of these direct land lines was contrasted in the press with a long series of failures in submarine cables attempting to span the Mediterranean Sea, and the Atlantic and Indian Oceans.

Although the Company had previously been able to send telegraph messages to all of the stations in Europe, this had involved frequent manual transcription or re-writing, often by clerks unfamiliar with the English language. Its technology had advanced to such an extent over ten years, with sophisticated new relays or repeaters of its own design, that the clerk pressing a tapper or key in London could, by 1866, be sure that the inker of the receiver was making a signal mark in Berlin, St Petersburg, Constantinople or even remote Omsk. This gave an incomparable increase in speed and accuracy of transmission.

As context for these ambitions the Company would have been aware that during 1862 their ally, the Russian telegraph administration had begun construction of their immense Siberian line from Moscow to the mouth of the Amur river on the Pacific coast. Lt Col Dmitri Dmitrievich Romanov, engineer of the East Siberian Telegraph, described his task in *Annales télégraphiques* of January 1862; a two-wire overhead

circuit was to be made from Moscow, through Nizhni Novgorod, Kazan, Perm, Ekaterinburg, Omsk, Tomsk, Irkutsk hence to the mouth of the Amur river. He emphasised its connections with London. The line to Omsk and Irkutsk was opened to schedule in 1862; the Pacific was anticipated to be reached in 1864. The Imperial authorities planned five extensions to this strategic route: 1] a submarine circuit to Japan, 2] a branch to Vladivostok (the base for a new Russian Pacific Fleet), 3] from Irkutsk south to Kiachta in China and so on to Pekin, 4] from Omsk (in direct contact with London in 1864) south to Cabool in Afghanistan and hence to the Punjaub in British India, and 5] from Kazan south to Teheran in Persia, also anticipating a connection to India. All of these objectives were achieved in the following decade, but mainly through the means of western companies, rather than the Russian state.

With this knowledge it is likely that the Electric Telegraph Company anticipated participating in an end-on connection at the Amur river with the Western Union Telegraph Company's extension from San Francisco, California, in the United States, through British Colombia and Russian America (Alaska) across the Behring Strait by way of a 53 mile cable, across the northern tundra to join the Siberian telegraph at the Amur, which Russian segments the Tsar had authorised on May 15, 1863 (in the Old Style calendar). As background, the Western Union company was at this time in fierce competition with the American Telegraph Company that had been formed by the Morse interests. American Telegraph were deeply involved with promoting the planned trans-Atlantic underwater cable. For these reasons, its enmity to Morse and its reservations as to the great cable, the Western Union was a natural ally for the Electric Telegraph Company.

Building the Western Union extension line north from California eventually commenced in July 1864, W T Henley's Telegraph Works of London being commissioned to manufacture the iron overhead line wire as well as the Arctic cable.

This would provide a circuit from London by way of Moscow and San Francisco to New York! But it was not to be, construction of the Russian America line was abandoned in July 1867...

It is reasonable to believe, from the early 1860s, that the Electric & International Telegraph Company had an "eastern" strategy; planning to implement a new public telegraph system in British India over the railways, uniting this with its domestic circuits by leased direct lines across Europe and Asia. It was only narrowly thwarted in the creation of the first global communications network.

On the Defensive

The threat of government intervention in the domestic market, starting with a moderate Act of Parliament in 1863 imposing limited regulation, balanced by the allowance of some general powers, led to a much more defensive business posture than had previously been the case. An annual dividend limit of 10% was enforced, as with other regulated utilities such as gas companies; however to overcome this imposition the Company began to top-up previous years' dividends to the maximum allowed with substantial bonuses.

As a counter-measure the Company revealed, in addition to its historical average annual dividend of 5%, that it had accrued a further 85% in what it called "reserved profits", which it expected the Government to take into account in the purchase price should the state choose to appropriate it. This was an early example of the defensive 'poison-pill' strategy to ward-off unwanted take-overs.

The pressure for acquisition came from ambitious civil servants in the Post Office who sought a communications monopoly "in the public interest". There was only a limited understanding of the real value of the wayleaves over the railways, or unlike the mails that there were few economies of scale in telegraphy. But in their lobbying they were to be supported by large elements of the press who resented their reliance on the telegraph for news. The press was keen to eliminate the growing number of public and private newsrooms that also received intelligence by telegraph, presenting it to their prosperous business clients instantly.

The Electric Telegraph Company
Growth in Message Traffic 1851 - 1868

The Company's message traffic during the eighteen years of its existence as a mature organisation grew enormously, the negative fluctuations being primarily driven by external financial and political influences, wars, post-war booms, investment booms and several money panics. From Government returns of the number of messages in thousands and the percentage increase from the previous year were:-

Year	Messages '000	% Increase
1851	99.2	-
1852	211.1	112.81
1853	345.8	16.41
1854	572.1	132.76
1855	745.3	30.27
1856	812.3	9.00
1857	881.3	8.49
1858	870.1	-1.26
1859	1,025.3	17.83
1860	1,117.4	8.98
1861	1,201.5	7.53
1862	1,534.6	27.72
1863	1,825.4	18.95
1864	2,356.4	29.09
1865	2,971.1	26.09
1866	3,150.1	6.03
1867	3,351.9	6.41
1868	3,755.3	12.04

The Company itself published slightly different numbers for messages: 1850 – 66,634; 1851- 101,216; 1852 – 215,137; and 1853 – 350,500. The differences probably accounted for by Press and Service (company) traffic.

Robert Grimston, the chairman, prepared and published "The Statement of the Case of the Electric & International Telegraph Company against the Government Bill for Acquiring the Telegraphs" in 1868.

In this he made several points; first, that in 1867 76% of its income came from just eighteen stations; 15% came from another eighty-one stations and that 3% came from the remaining 1,100 stations. Of the 76% half the money came from the Central Station in London and a quarter from the main offices in Liverpool and Manchester. The Company had surveyed all towns in the United Kingdom with populations of more than 1,500 people then un-provided with public telegraphy and found that they amounted to just 1,000 places. The Company's view was that extensions of line to these small towns would never pay their costs.

The Company claimed that postmasters in rural districts were unfit to manage the complex apparatus and to deliver urgent telegraphic messages as well as mail.

Grimston recorded that the telegraph companies in Britain had a long history of profitable working and that telegraphs in public ownership in Europe either made operating losses and were a burden on the public purse or were subsidised by so-called transfer traffic, which merely passed through its circuits, going to and from other countries, often Britain.

The companies' circuits in the United Kingdom were proved substantially cheaper to work than those on the continent.

He also noted that a uniform low message rate, even with very intense traffic, was unworkable in terms of profit, as proven by the competitive but luckless London District Telegraph Company.

With its current pricing regime the Electric had increased the number of messages carried 105% in four years, from 1,534,590 in 1862 up to 3,150,149 in 1866. Yet working expenses had increased just 40%. The number of messages per mile of wire, a measure of efficiency, grew from 44 to 66 in the period.

Grimston declared, "There is no telegraph station *in the World* with which the Electric and International Telegraph Company is not in connexion, and with which they do not interchange communications! And this has been effected by the private enterprise of a few individuals within a period of little more than twenty years!"

He added, “The life of a passenger travelling upon a railway is so protected that not above one passenger out of every *Twenty Millions of Passengers* conveyed is sacrificed by railway accident – a result mainly due to that system of telegraphy which secures immunity for every train which traverses a line.”

The Electric proposed finally in Grimston’s paper that the three extant national telegraph companies merge their circuits into one joint-stock concern under greater state regulation.

Robert Grimston’s predictions turned out to be correct: too many local circuits were built by the Government, all losing public money; local post offices had to be equipped with £30 dial telegraphs rather than £6 needle telegraphs requiring trained clerks; a uniform low 1s 0d message rate encouraged a huge traffic which was not counter-balanced by any cost-saving efficiencies of scale. Later, wholly illogically, the message rate was reduced to half the charge originally proposed.

As well as the increasing calls for state intervention in telegraphy, mostly emanating from the provincial press and elements of the Post Office, the year 1866 saw the collapse of the entire London financial market. Overend, Gurney & Company, a historically grand firm of money-dealers, topping a pyramid of finance houses, public works, railway, dock and ship-building enterprises, failed through gross speculation in May, dragging with it banks in the metropolis and in the country. The new intercontinental cable companies just managed to raise funds during 1865 and 1866. Capital available shrank to nothing for four years and the events of the year led in part to a thirty-year slump in the British economy. The ability to expand its public facilities, even if the will were there, evaporated.

The Telegraph Act of 1863 gave powers to erect circuits to any incorporated company, removing the need for a Special Act of Parliament, other than when acquiring a patent monopoly. Although government appropriation was being widely discussed these powers to erect telegraphs were adopted by several local concerns for public telegraphs, by large and small railway companies, by large industrial organisations and by bodies such as those managing lighthouses, needing remote communication. The effect on the Electric and its competitors was negligible as those small lines offering public access commonly worked in concert with one or other of the national providers. The Company also assisted in the promotion of several of these, where it felt applying its own capital was not likely to be profitable.

According to government returns, in 1863 the Company possessed 8,282 miles of line, 4,489 instruments and 1,022 stations. In the following year it had 8,658 miles and 5,136 instruments. The number of telegraph stations apparently remained the same.

In 1863 the Electric tried a version of Wheatstone’s new automatic telegraph, creating a triangular circuit between Founders’ Court in London, Bristol in the west of England, Birmingham in the Midlands and back to London. It installed Wheatstone’s tape-fed rotary sender but connected it to its ordinary American receiver; 166 letters were transmitted in one minute, which compared with a manual performance by an expert clerk of between 117 and 123 letters. As it did not try Wheatstone’s much improved automatic receiver at this time the difference in rates was not overly significant.

In December 1863 a great gale swept the North of England and Scotland. The Electric’s board reassured its shareholders in the following January that its “timber” (telegraph poles) in the north had been rigorously reinforced and was proof against storms. It announced, too, that new circuits had been opened between Newcastle and Edinburgh; all the poles on the line were replaced with strengthened timber. The vital Zandvoort cable had been repaired on August 6, 1863; the English inshore end was replaced with a new section taken from spare coils that the Company kept in its stores. In January 1864 the Dublin and Holyhead circuit failed yet again; all of the Company’s traffic between Britain and Ireland was diverted through the new Wexford cable. New wires were inserted in the long-lines between London, Liverpool and Manchester in late 1863 so that direct transmission, without manual transcription, could take place to virtually all of the major towns in Britain.

On December 2, 1863 the Company received a message from Irkutsk, 4,000 miles east of St Petersburg, on the way to China and the Pacific. It now took eight hours rather than twenty-three days to reach East Siberia.

What had come to be an annual telegraphic event, dating from 1846; the Queen's speech on the opening of Parliament in November 1864 comprised 965 words and was transmitted to the provinces and Europe in thirty-one minutes. In 1846 it took an hour to send 360 of Her Majesty's words to Norwich.

Earlier in the year, on Tuesday, January 26, 1864, the Members of Parliament for Birmingham, John Bright and William Scholefield, engaged in a great public debate in their joint constituency. It was regarded as an event of national significance. C V Boys, the Company's news superintendant, and Mr Wade, the clerk-in-charge in Birmingham, made special arrangements for transmission of the speeches to 'The Times' in London. Sending commenced at 8.30pm, three American telegraphs and Varley's relays were in circuit. With a half-hour break around 11pm, the transmission was finished at 2.30am. The great debate's 12,000 words, containing 49,000 letters, appeared in the first edition of 'The Times' on Wednesday, January 27, over six whole columns of print. The tape received on the three instruments at Telegraph Street was over one mile long.

In addition to its eastern ambitions, almost invisibly, from the early 1860s, the Company's engineers and electricians took over management of the Atlantic telegraph project, to connect Ireland and Newfoundland in America, but they carefully distanced themselves from raising capital. The parliamentary commission on the failed cable of 1858 was dominated by associates of the Company and its allies, with six out of eight members, including Charles Wheatstone. It also sponsored a new company to make a direct cable from South Wales to connect with the proposed Atlantic cable end in Ireland in 1862. The Electric's engineer, Latimer Clark, and its electrician, Cromwell Varley, displaced the original incumbents in managing the great cable. Together they drove it to ultimate success in 1866.

Its corporate interest in the Atlantic cable, as opposed to the technical support offered by its scientific advisors, engineers and electricians, coincided with the extinction of the old Morse concern, the American Telegraph Company, which had promoted the cable in Washington. It was absorbed by the Western Union Telegraph Company in 1866, with whom the Electric maintained a friendly relationship. Its chairman, Robert Grimston, and its original founder, G P Bidder, joined the Atlantic Telegraph Company's board in 1866.

Apart from its domestic and Holland cables, by which it incidentally acquired a substantial knowledge base, the Electric company had avoided direct involvement in expensive and risky underwater telegraphy during the 1850s. Its technology emphasised efficiencies and performance in land circuits; its expansion strategy, on using these improvements in co-operation with land-based allies abroad.

The Wexford cable from South Wales to Ireland was broken at the Irish end during gales in November 1864. As their cable steamer *Monarch* was under repair, the Company employed the 195 ton steam tug *Cruizer* out of Liverpool in her place to lay 8¼ miles of new four core cable. Captain James Blacklock and Chief Mate J Elvish of the *Monarch* were in command of the tug, and, along with the Company's electrician, Cromwell Varley, saw the circuit restored on January 24, 1865. As a precaution the cable landing site was moved away from the abrading rocks that caused the damage, to two miles north from the Tuskar Light; the new Wexford end also had a massive 20 tons per mile weight.

The year also saw commencement of what was the last of the Electric's major domestic circuits, in terms of mileage if not of traffic. Using the line of the Cambrian Railways it extended from Whitchurch in England through mountainous Mid-Wales to the coastal town of Aberystwyth in late 1864, 95 miles; and by October 1867 north along the railway on the exposed west coast of Wales, 50 miles, to Pwllheli. This 145 mile circuit can scarcely have paid its way in public messaging, but was required for working the railway.

The Company, the Board noted at the January shareholders' meeting, had expended £4,485 in the last six months of 1864 on expanding is "air circuits", the pneumatic apparatus, between its busiest offices in Liverpool, Manchester and Birmingham. It had also increased its line mileage by 111, mainly for railway use, and its length of wire by 1,518 miles.

In its domestic market, in 1865, there were 9,306 miles of line, 45,044 miles of wire, 1,180 stations and 5,778 instruments. In that year 2,196,046 messages were sent on its circuits. On July 10, 1865 the Company, and its competitors, abolished the flat rate charge of 1s 0d for twenty words between the largest cities and towns as

unprofitable and reverted to a common zone tariff. Despite this the number of messages increased in the latter half of the year.

On October 28, 1865 Richard Till, one of the original directors of the Company in 1846, died. A lawyer and collector of income tax, he was a close associate of G P Bidder and Morton Peto, being a director with them of the Electric, the Rock Life Assurance Company and the Norfolk Railway, as well as of other railways. He was age 81.

On the failure, once again, of its Howth to Holyhead cable in 1865, and after the breaking of the Wexford cable in the previous November, the Company announced that it would not replace it but instead lay its own cable on the shorter, safer route from Port Patrick in Scotland to Antrim in Ulster – parallel to that of the Magnetic company's – "securing the possession of a double connection to Ireland". It would form new circuits from Liverpool, Manchester and Glasgow to Belfast and Dublin. The new cable was completed between Killantringan, Wigtownshire, and Whitehead, Antrim, on June 19, 1866. It connected in Scotland with its overhead wires already alongside of the Portpatrick Railway to Dumfries and the rest of its network.

More importantly it also wanted a third cable to Europe, to increase the capacity of its existing two through Holland. In 1865 it approached the govern-ments of Holland, Hanover and Prussia for new landing rights. Fortuitously the Submarine Telegraph Company's concession to Hanover was forfeited in 1865; Reuter's Telegram Company, the news agency, stepped in and acquired the rights and immediately offered a quarter share, one wire, for use of the public to the Electric & International Telegraph Company. The Company thus gained additional access to the Continent without increasing its capital.

On the morning of January 11, 1866 an immense storm devastated its overhead circuits within a fifty mile radius of London. A heavy fall of snow in severely sub-zero temperatures coated wires with ice to a thickness up to six inches. The lines alongside of the Great Western Railway between London and Bristol, and on the London & North Western Railway between London and Rugby, a total of 450 miles of wires and poles, were "entirely destroyed" by snow and winds. Henry Weaver, the company secretary, estimated the cost of repairs at £20,000. The Company's system was only fully restored on February 19, 1866.

In addition to this extraordinary expenditure from its reserve fund, the Board announced that the number of circuits to Edinburgh, Leeds, York, Derby and East Anglia were to be increased in 1866 to cope with increased demand. A new line was also laid along the south coast of England between Brighton, Portsmouth and Southampton.

In 1866 Richard Spelman Culley, formerly District Superintendent for the West of England, who had worked for the Company since 1846, was appointed engineer in place of Latimer Clark. The assistant engineer then was W H Winter. Both were to join the Post Office Telegraphs in 1870.

With the success of the cables between Ireland and Newfoundland the Electric and Magnetic companies came to a joint agreement with the Atlantic Telegraph Company and the Anglo-American Telegraph Company, the cables' owners, on November 13, 1867. A two wire circuit dedicated to Atlantic traffic, between the cable end at Valentia and London, via Wexford, was leased by the former to the latter.

The Electric Telegraph Company
System Development 1850 – 1868

At December	Line Miles	Wire Miles	Instrument Numbers
1850	1,786	7,206	-
1851	2,122	10,650	-
1852	3,709	18,545	-
1853	4,409	21,315	-
1854	4,954	24,304	-
1855	5,228	27,989	2,603
1856	5,398	28,627	2,777
1857	5,637	29,498	2,938
1858	6,103	30,733	3,024

1859.....6,272.....31,346.....3,195
1860.....6,541.....32,148.....3,352
1861.....6,727.....32,787.....3,529
1862.....7,957.....35,066.....4,034
1863.....8,230.....39,042.....4,489
1864.....8,659.....41,592.....5,136
1865.....9,306.....45,044.....5,778
1866.....9,740.....47,572.....6,491
1867.....10,007.....49,619.....7,245

The statistics provided by Richard Spelman Culley, the Engineer-in-Chief to the Company, in his Report to Parliament on July 6, 1868. These differ from slightly from others previously provided.

During 1868 the Electric & International Telegraph Company advertised its principal stations as:

London: Central Station, Founders' Court, EC; and branches, Blackwall, at the railway station, EC; 13 Bank Buildings, Metropolitan Cattle Market, N; 6 Coal Exchange, Lower Thames Street, EC; 149 Cheapside, EC; 27 Cornhill, EC (7am to 12 midnight); Crystal Palace, Sydenham, SE; 6 Edgware Road, W; Fenchurch Street, corner of Mincing Lane, EC; 30 Fleet Street, EC; 10 Foster Lane, EC; General Post Office, St Martin's le Grand, EC; Gloucester Road North, Camden Town, NW; 17a Great George Street, Westminster, SW; 241 High Holborn, WC; Highbury, corner of Highbury Place, Islington, N; House of Commons, Central Lobby, SW; 8 Leadenhall Street, EC; Lloyd's Merchants' Rooms, EC; London Docks, main entrance, E; Subscription Room, Jack's Coffee House, Old Corn Exchange, EC; 74 Old Broad Street, EC; 314 Oxford Street, W; 28 Regent Street, SW; 22 St George's Place, Knightsbridge, SW; Shoreditch, archway, front of railway station, EC; 2 Southwark Street, Borough, SE; Stock Exchange, New Court entrance, Throgmorton Street, EC; 448 Strand, WC (open day and night); 89 St James's Street, SW; Tattersall's, SW; 178 Upper Thames Street, EC; West London Railway, Kensington W; 32 Wharf Road, City Road, N; 106½ Camden Road, NW; New Court, Throgmorton Street, EC; and at the termini of all the railways, Euston Square (London & North-Western Railway), King's Cross (Great Northern), Liverpool Street (Great Eastern, formerly the Eastern Counties), Fenchurch Street (London & Blackwall), London Bridge (South Eastern and London, Brighton & South-Coast), Cannon Street (South Eastern), Waterloo Bridge (London & South-Western), Victoria (London, Chatham & Dover and London, Brighton & South-Coast) and Paddington (Great Western). This gave the Electric a total of forty-five public telegraph offices in the metropolis.

Aberdeen, 59 Marischall Street and Railway Station
Bath, 8 New Bond Street Buildings
Birmingham, Temple Buildings; Corn Exchange; Railway Stations
Belfast, Victoria Street; 8 Donegal Square
Brighton, 18 Old Steine; Bedford Hotel
Bristol, Exchange Buildings; Railway Stations
Cambridge, Town Hall; Railway Station
Cardiff, 5 Powell Place, Docks; Town Hall; Railway Station
Cork, 89 South Mall
Derby, Corn Exchange; Railway Station
Dublin, 4 College Green; Canal Harbour; Eden Quay
Dundee, Corner, Cowgate & Wellgate
Edinburgh, 68 Princes Street; Parliament House; Railway Stations
Falmouth, Arwenack Street
Glasgow, The Exchange; St Vincent Street; Railway Stations
Hull, 53 Low Gate; Paragon Street; Southend
Leeds, 4 Park Row; Railway Stations
Leith, 26 Bernard Street
Liverpool, 25 Castle Street; 9 Exchange Buildings; 12 Walter Street; Lime Street Stations, &c.
Manchester,4 York Street; Ducie Buildings; Stock Exchange; 1 Mosley Street; Railway Stations
Newcastle-upon-Tyne, 1 & 2 Lombard Street; Railway Station
Newport, Old Masonic Hall
Monmouthshire, Railway Station
Norwich, Royal Hotel, Market Place
Perth, Railway Station

Plymouth, Plymouth side of Railway Bridge; The Exchange
Portsmouth, 12 The Hard, Portsea; High Street; Railway Station
Preston, Railway Stations
Sheffield, New Exchange; Railway Station
Southampton, High Street; Railway Station
Sunderland, William Street; Railway Station
Wakefield, Corn Exchange; Railway Station
Waterford, Chamber of Commerce
Weymouth, Luce's Royal Hotel
York, 17 Mickelgate; Railway Station

But the towns of Cricklade with 37,000 inhabitants, Gateshead with 33,000, Oldbury, with 16,000, Pembroke with 15,000 and Dukinfield, 15,000, were then still without any telegraphic facilities. Most of them, however, were a short distance from "telegraph" towns, being within walking distance of Newcastle and Birmingham, for example.

The Electric's last major domestic investments were completed in 1867; their original sub-sea cable to the Isle of Wight of 1852 was duplicated, and an underwater cable laid from Kingston-upon-Hull across the river Humber to New Holland, a distance of two miles, giving access to Great Grimsby, replacing its old submarine circuit of 1856. Hull had been the site of its first underwater cable in 1849.

The Electric Telegraph Company's original station for its Holland cables at the Orfordness Lighthouse, Dunwich, East Anglia
Of note are the many ships, whose anchors fouled the 1858 cable

Also, the English end of the continental cable laid from Dunwich in East Anglia to Zandvoort in Holland in 1858 was moved to Lowestoft, further north, where the companion 1862 Dutch cable was landed, to secure it from damage by ships anchoring in the Orfordness roads. This involved the laying of thirty-three miles of heavyweight four-core cable obtained from the India Rubber, Gutta Percha & Telegraph Works Company of Silvertown, their first work for the Electric company. Engineered by R S Culley, the project involved lifting and cutting the 1858 cable in mid-ocean and splicing to the new section, which was then laid into Lowestoft between August 8 and 28, 1868 by the Company's steamer *Monarch*. Operations were so prolonged as *Monarch* was called away to make cable repairs elsewhere. The old shore section to Dunwich was later recovered.

Wheatstone's *automatic telegraph* with punched tape feed and fast-writing receivers was introduced on its busiest long lines from London during 1867, initially to Newcastle-upon-Tyne, then in the same year to Manchester, Edinburgh and Glasgow. This multiplied the sending and receiving rates by a factor of five over its needle and American apparatus. Wheatstone assigned the rights to the Company on July 1, 1867 in return for a royalty of 7s 6d per mile per annum. To speed up the message entering process, the Company's engineer, R S Culley, devised an automatic punch in 1867 powered by the air produced for its "pneumatic circuits" or message tubes.

Unlike its competitors, the Magnetic and United Kingdom Telegraph companies, the Electric continued investing in and refurbishing its network to the very end. It added

2,500 miles of wire to its circuits in 1866 and 2,000 miles in 1867. With the prospect of government appropriation the other companies increased wire mileage only in three figures. Their roadside overhead wires had similarly been allowed to deteriorate, whilst the Electric's long lines by the side of the railways were maintained in excellent condition, even in the opinion of the Post Office's hireling experts.

The Company's last extension to its network was the opening of the telegraph office in Wick in Caithness, in the far north of Scotland, on September 25, 1868, connecting by a difficult roadside circuit along the coast south to Golspie and then along the new Sutherland Railway to Bonar Bridge and Inverness. Wick was to be the mainland terminal for the new cable of the Orkney & Shetland Islands Telegraph Company.

The final Board of Directors had thirteen members, the Hon Robert Grimston, chairman, Frederick N Micklethwaite, deputy chairman, G P Bidder, Thomas Brassey, the Earl of Caithness, W F Cooke, C W Earle, E R Langworthy, Mark Philips, Lord Alfred Paget MP, W H Smith MP, Joseph Whitworth, and Major-General William Wylde CB.

William Fothergill Cooke and George Parker Bidder had been directors of the Electric Telegraph Company since its founding in September 1845, twenty-three years previously. In that year the Company inherited 1,000 miles of telegraph line from Cooke & Wheatstone.

In 1868, its final year of independent working, the Electric & International Telegraph Company had a paid-up capital of £1,177,425, only a trivial £7,550 of which was on loan, with 10,007 miles of line (50,065 miles of wire) through-out England, Wales, Scotland and Ireland, as well the offshore islands. It was healthy and wealthy enough to pay down £60,000 in debentures, borrowed to finance its cables, in the previous twelve months. The Company's 1,465 clerks and 759 messengers sent 3,137,478 inland messages and 539,188 foreign messages. It possessed 7,245 telegraph instruments, of which 662 were inkers or printers.

As a last moment of drama on December 26, 1868, the officers and clerks of the Electric Telegraph Company were sworn-in as Special Constables in the City of London in reaction to Fenian outrages. The City, in which the Company was then the largest private employer, alone recruited 3,090 men over age twenty-one to watch over property for attacks by incendiaries (terrorists), especially at night, and to assist the City Police in suppressing riot and disturbance of the public peace.

The final act of the last annual meeting of its shareholders, held on Tuesday, August 17, 1869 was to declare an annual dividend of 25%, an award of £5,000 in bonuses to the staff and a further amount of £2,500 to Henry Weaver, the secretary. The money came from the liquidation of its reserve fund as well as from its half-yearly income, which had risen from £71,246 to £89,783.

The Company, and its competitors, had two more years of phoney existence as the Government made administrative arrangements and began an extensive array of line extensions. It was not until February 5, 1870 that the Electric & International Telegraph Company ceased working. Only its offshore associates, the Orkney & Shetland Islands Telegraph Company and the Scilly Islands Telegraph Company, were to escape immediate appropriation; the first was to be acquired by the Post Office on April 12, 1876, the latter on April 24, 1878.

The Official Seal of the Electric Telegraph Company
Father Time laying down his scythe for bolts of lightning

"There is no telegraph station in the World with which the Electric and International Telegraph Company is not in connexion, and with which they do not interchange communications!
And this has been effected by the private enterprise of a few individuals within a period of little more than twenty years!"

There were many other telegraph companies in Britain, over sixty in fact, just click-through here or on the side bar for their stories, which are in *Competitors & Allies* and other chapters

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Telegraph, from the Greek "*tele*", distant, and "*graphos*", writing

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Appendix 9

Appeal Decision (APP/X5210/E/11/2161889 and APP/X5210/A/11/2161885)

20 March 2012

The Planning Inspectorate

Appeal Decisions

Inquiry held on 28 February to 7 March 2012
Site visit made on 28 February 2012

by John Papworth DipArch(Glos) RIBA

an Inspector appointed by the Secretary of State for Communities and Local Government

Decision date: 20 March 2012

Appeal A: APP/X5210/E/11/2161889
The Courtyard, 44-44a Gloucester Avenue, London NW1 8JD

- The appeal is made under sections 20 and 74 of the Planning (Listed Buildings and Conservation Areas) Act 1990 against a refusal to grant conservation area consent.
- The appeal is made by Victoria Square Property Company Ltd against the decision of the Council of the London Borough of Camden.
- The application Ref 2010/6629/C, dated 3 December 2010, was refused by notice dated 5 April 2011.
- The demolition proposed is of buildings identified as number 2 at the northwest corner of the site and number 4 at the eastern corner of the site.

Appeal B: APP/X5210/A/11/2161885
The Courtyard, 44-44a Gloucester Avenue, London NW1 8JD

- The appeal is made under section 78 of the Town and Country Planning Act 1990 against a refusal to grant planning permission.
- The appeal is made by Victoria Square Property Company Ltd against the decision of the Council of the London Borough of Camden.
- The application Ref 2010/6627/P, dated 3 December 2010, was refused by notice dated 5 April 2011.
- The development proposed is redevelopment of the site by refurbishment of existing buildings and erection of new 4 and 5 storey buildings at the northwest corner of the site and new 3 storey building at the eastern corner (following demolition of existing) to create 15 new residential units (Class C3) and additional office floor space (Class B1).

Decision Appeal A

1. I allow the appeal and grant conservation area consent for demolition of buildings identified as number 2 at the northwest corner of the site and number 4 at the eastern corner of the site at The Courtyard, 44-44a Gloucester Avenue, London NW1 8JD in accordance with the terms of the application Ref 2010/6629/C, dated 3 December 2010 and the plans submitted subject to conditions 1) to 3) on the attached Annex 2.

Decision Appeal B

2. I allow the appeal and grant planning permission for redevelopment of the site by refurbishment of existing buildings and erection of new 4 and 5 storey buildings at the northwest corner of the site and new 3 storey building at the eastern corner (following demolition of existing) to create 15 new residential units (Class C3) and additional office floor space (Class B1). at The Courtyard, 44-44a Gloucester Avenue, London NW1 8JD in accordance with the terms of the application, Ref 2010/6627/P, dated 3 December 2010, subject to conditions 1) to 11) on the attached Annex 2.

Application for Costs

3. At the Inquiry an application for costs was made by Victoria Square Property Company Ltd against the Council of the London Borough of Camden. This application is the subject of a separate Decision.

Procedural Matters

4. The Council's notice cited 16 reasons for refusal on the planning application but prior to the production of the Proofs of Evidence and hence the opening of the Inquiry, it had been agreed between the parties that most could be overcome by the provisions of a S106 Undertaking and this will be considered at the appropriate part of this Decision. That left two reasons for refusal, regarding the loss of employment floorspace and the effect on the conservation area, the latter being a concern shared with the refusal of conservation area consent. On the second day of the Inquiry the reason for refusal on employment floorspace was withdrawn.

Main Issue

5. As a result of the above, the main issue in both Appeal A and Appeal B is;

   - The effect of the proposals on the character and appearance of the Primrose Hill Conservation Area.

Inspector's Reasons

6. With regard to the effect of the proposed demolition, attention was drawn to the guidance in Planning Policy Statement 5 *"Planning for the Historic Environment"* and later advice from English Heritage on demolition of unlisted buildings that make a positive contribution to the character and appearance of a conservation area. The latter expresses the view that demolition of such a building would constitute substantial harm to a designated heritage asset, the conservation area, and should be assessed against Policy HE9.2 of PPS5. The Draft National Planning Policy Framework contains a statement to a similar effect at paragraph 187.

7. The hierarchy of consideration can be set out as follows;

   - For demolition of buildings that are a negative feature, no harm would be likely.

   - For buildings that are a neutral feature, it is likely that the character and appearance of the area would be preserved, and there would be no harm, as determined in the South Lakeland Judgement.

   - For buildings that make a positive contribution, there could be harm to the character and appearance of the area as a whole, but depending on the nature of the area, and of the building, that harm could be substantial or less than substantial.

   From this it appears not necessarily the case that the demolition of a building which makes a positive contribution to the character and appearance of a conservation area would automatically lead to substantial harm and consideration under Policy HE9.2, but could cause less than substantial harm and be considered under Policy HE9.4. Any other interpretation would risk there not being a need for Policy HE9.4 in conservation area consent

considerations concerning positive buildings. The Draft National Planning Policy Framework does not have a policy similar to HE9.4, only one similar to HE9.2, but limited weight can be attached to this document in its present draft form. The English Heritage interpretation does not carry the full weight of policy or change the statutory requirement in Section 72(1) of the Planning (Listed Buildings and Conservation Areas) Act 1990 that special attention be paid to the desirability of preserving or enhancing the character or appearance of the conservation area.

8. In the appeal case, the demolition is to two buildings as part of a complex of buildings referred to as number 44 Gloucester Avenue and the buildings at that address are stated as making a positive contribution to the area. However, it is clear that these are separate buildings and should be treated as such for the purposes of whether consent is required. It is clear too that, similar to listed building considerations, they have a group value and not all buildings contribute equally. The most prominent parts of the appeal complex in public and street views would be retained by the proposed redevelopment works. The visual effect of demolition is tempered by the limited value of Building 4 and the limited visibility of Building 2 due to the proximity of the frontage building of Sunny Mews. The retention of Building 3 and 5 differentiate this proposal from the appeal considered in 1998 (Ref; APP/X5210/E/97/813649).

9. In detail, and having regard to the English Heritage publications *"Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment"* and *"Understanding Place: Conservation Area Designation, Appraisal and Management"*;

   - Evidential value, the buildings are standing and can be recorded, secured by condition.

   - Historical value, this is high for the complex as a whole, varying according to the building. They are linked to the introduction of telegraph communication with the site being close to an early railway into London. Building 3 is important to this, and Building 1 continues this history at a later date; However, Building 4 has lost much of its historic association and Building 2, including the rear part, whilst being a further extension of the history of the site's use was an ancillary and later building. Building 5 provided living accommodation associated with the industry. There is no evidence of the architects, and the relationship with other assets is limited mostly to the line of the railway nearby the nature of which has changed considerably over time. With regard to the development of the settlement, there is the link with the railway and the buildings are part of other 'back land' employment uses, but these links are now tenuous.

   - Aesthetic value is largely limited to the frontage blocks and that seen through the arch and southern opening. Building 2 does feature in glimpsed views since the redevelopment of the adjoining Sunny Mews, and it does present a gable end design, but not one of particular architectural or aesthetic interest. Building 4 without its defining flue is not an attractive building either on its own or in association with the others.

   - Communal value is likely to be low as far as the original uses were concerned due to their having ceased and telecommunications having moved on since then. The present uses will have been a part pf the

community for some time but no more than as a place of employment and that aspect is retained.

10. The overall assessment is that of the buildings to be demolished being of less value to the character and appearance of the conservation area as a whole than those left, although some weight does attach to part-demolition of what is at present a complete collection of buildings. It is concluded that demolition as proposed would cause identifiable harm to the designated heritage asset, but that in the terms of PPS5 policies in Section HE9, that harm does not amount to the substantial harm of Policy HE9.2. Therefore Policy HE9.4 applies where there is the opportunity to weigh considerations in the balance. Part of that balance is the nature of the replacement building.

11. Turning to consider the merits of the planning proposal;

- The improvement works to Building 5, the house, would be a significant benefit to the streetscene and the wider area as it is currently unused and visually unattractive. That building would have been lost in the 1998 appeal scheme.

- Works to the main range, Building 1, would secure its beneficial use as a positive feature of the area and the proposed extension to house the lift and services would be little seen from truly public places. The view from within the courtyard would be of a distinct, modern addition, clearly separate from the design of the older building but not seriously obscuring appreciation of its qualities. The benefits of providing the improved access and facilities whilst preserving the usable floorspace outweighs any adverse effect. This building would have been extended in the 1998 appeal scheme.

- Similarly, work to Building 3 to the rear would improve its appearance and safeguard its future as a feature of views into the courtyard from the road. Mention has been made of the proposed rearrangement of openings, but that is not unusual in the history of such buildings; there is little to suggest that what is here now is original, and the work does not strike at the heart of what makes the building of interest. Solar panels could, as the Council suggest, be omitted by condition, but they would further the aims of PPS5 Policy HE1 and should be part of the overall planning balance.

- The replacement for Building 4 would mediate visually between the newer buildings at number 42 and the existing structures on the site and whilst its roof would be visible above and beyond that of the house in some views, this would not be harmful due to the separation between them and the robust design of the house itself remaining the dominant feature. Only a roof could be seen; a bland grey/black form not unlike sky behind.

- The new buildings to replace Building 2, including the part to the rear, is of two forms, that adjoining Building 1 providing a more traditional character and appearance, and although the roof may be glimpsed through street trees in medium distance views, this would not seriously erode the value of the view or the building being again a grey/black form.

- That to the rear again mediates between the traditional and the modern at Sunny Mews and would not be seen in close views due to the set-back and the cut-off of the frontage of the neighbouring building. There would be a glimpse of the roof in the medium views just mentioned, but this would not

cause harm as no glazing would be visible and the proposed zinc would have a similar appearance to a sky background.

- Improvements to the courtyard itself and re-arrangement of parking and proposed hard landscaping works would enhance its appearance.

12. Reference was made to the view from the supermarket on the far side of the railway tracks. That is a view into, rather than from within, the conservation area and the new buildings at either end of Building 3 would be prominent. However, this is not identified as an important view in the conservation area appraisal and its value is reduced by firstly the clutter of overhead line equipment on the railway and secondly by the quality of the viewpoint, being the service area and bus stops of the supermarket. Views from the railway would be fleeting and among a range of varied buildings. There is nothing about the design of the new buildings to cause harm in these views.

13. In conclusion on this issue, the net effect of the demolition and redevelopment would cause a limited harm to the character and appearance of this well-preserved and interesting conservation area, and that which has been identified is limited to the effect of demolition; the proposed new development would not cause harm. Hence the planning balance should be carried out in accordance with Policy HE9.4, which states that where a proposal has a harmful impact on the significance of a designated heritage asset which is less than substantial harm, in all cases the public benefit of the proposal should be weighed against the harm and that it should be recognised that the greater the harm to the significance of the heritage asset the greater the justification will be needed for any loss.

Other Considerations and Planning Balance

14. The first reason for refusal on the effect on the supply of employment floorspace was withdrawn, but for completeness, and having regard to third party comments, will now be considered. The complex of buildings provides accommodation for a range of commercial users, but there are areas not presently in use. Of these, parts such as the basements are of poor quality and would attract a limited range of uses due to their lack of natural light and unattractive layout. Others have an inconvenient access and are not well-suited for modern commercial use. No doubt there are, as the Council suggest, businesses who would benefit from lower-grade and presumably cheaper accommodation, but generally the introduction of a passenger lift would provide for disabled access and increase the value of upper floors and the work to make the basements more usable would be a welcome benefit. Having regard to the floor area being re-provided and with the flexibility available within the Class B1 uses, the proposed provision of employment floorspace would not compromise the achievement of the aims in Core Strategy Policy CS8 or Development Policy DP13.

15. Moving on to the planning balance, Policy HE9.4 of PPS5 requires such a balance to be struck. As just stated, there would be improvements to the quality and utility of the employment floorspace without prejudicing the aims of policy on its provision. In addition, residential uses would be provided for in modern accommodation, and although the Council state that there is an ample supply of housing land against the requirement of the London Plan, that requirement is to be exceeded if possible. There are doubts in the Borough over the provision of conventional housing as opposed to the bringing back into

use of unused units. The provision of affordable housing in this area should be accorded substantial weight and the redevelopment would make better use of previously developed land. The Central Government aims of 'planning for growth' would be furthered. The proposals would bring about improvements to buildings in the conservation area and the car-capped scheme and travel plan would have significant benefits unavailable if no development took place. The provision of solar panels would be a benefit with no unacceptable effects.

16. On the other side of the balance, the harm through demolition would be identifiable but limited and replacement would be, at worst, neutral so that the net effect on the character and appearance of the conservation area would be of only limited harm. It is concluded that this limited harm would be more than outweighed by the public benefits of the scheme leaving an overall benefit resulting from the proposals.

Agreement and Conditions

17. A signed Agreement was presented which makes provision for affordable housing, restrictions on parking of private cars, a construction management plan, an energy efficiency and renewable energy plan, local employment and procurement, a service management plan, sustainability plan and travel plan, and contributions to community facilities, education, highways and public open space. Regulation 122 of the *Communities Infrastructure Levy Regulations 2010* states that a planning obligation may only constitute a reason for granting planning permission for the development if the obligation is necessary to make the development acceptable in planning terms, directly related to the development, and fairly and reasonably related in scale and kind to the development. Having mind to the nature of the development and the particulars of the location and the policy framework, it is concluded that the proposals satisfy these tests and that full weight can be attached to the provisions of the Agreement; it ensures that the matters to which weight has been attached in the planning balance are delivered.

18. Draft conditions were discussed and amended during the Inquiry. For the conservation area consent appeal there would be a need for certainty in the provision of the replacement buildings and the undertaking of a programme of recording prior to and during demolition. On the latter, the recording proposal and methodology should first be agreed and should include recording of matters found during demolition as well as the existing buildings.

19. With regard to the planning proposals, there is a need for control over privacy, mechanical plant, cycle facilities, the provision of lifetime homes, fittings added to the building, and the provision of landscaping. Further details would be required of materials, joinery and the like to ensure the quality of the building work. It was agreed that a suggested condition requiring a Basement Impact Assessment was not required, although the need for expert inspection appears reasonable in these circumstances. However, that submitted was vague as to 'suitably qualified' and 'appropriate professional body' and a different form of words is required to avoid this. As the solar panels to Building 3 are considered acceptable, there is no need for the suggested condition omitting them. With regard to noise levels, there was some doubt as to the precision of the proposed condition and this can be overcome by the need for scheme as set out in the example in Planning Policy Guidance Note 24 *"Planning and Noise"*. A condition is required to list the updated drawings to which permission relates, for the avoidance of doubt and the proper planning of the

area. As with the Agreement, many of these conditions are necessary to ensure that benefits are realised.

Conclusions

20. The appeal scheme of demolition and redevelopment as proposed would satisfy the requirements of the 1990 conservation areas Act, would accord with the aims of PPS5 with regard to designated and other heritage assets, and would not be contrary to Core Strategy Policy CS14, and Policies DP24 and DP25 of the Camden Development Policies 2010-2025, on securing high quality design and preserving Camden's heritage. For the reasons given above it is concluded that both Appeal A and Appeal B should be allowed.

S J Papworth

INSPECTOR

ANNEX 1

APPEARANCES

FOR THE LOCAL PLANNING AUTHORITY:

Megan Thomas she called;	of Counsel
Charles Rose BA(Hons)	Conservation and Design Officer London Borough of Camden
Eimear Heavey BA MSc	Senior Planning Officer London Borough of Camden

FOR THE APPELLANT:

James Strachan he called;	of Counsel
Dr Chris Miele MRTPI IHBC FRHS FSA	Partner Montagu Evans LLP
Douglas Paskin AADip RIBA	Senior Partner PKS Architects LLP
Will Edmonds BA(Hons) MRTPI	Partner Montagu Evans LLP

INTERESTED PERSONS

Pam White	Vice Chair Primrose Hill Conservation Area Advisory Committee

DOCUMENTS

Core Documents CD1 to CD61 were available at the opening of the Inquiry and the following is the agreed numbering for additional documents handed in at the Inquiry;

Document	CD62	Photograph Neubau Service Centre submitted by appellant
Document	CD63	Building Regulations Approved Document B Volume 2 submitted by appellant
Document	CD64	Photographs site and surroundings submitted by appellant
Document	CD65	Aerial context photographs submitted by appellant
Document	CD66	Report by Mr Scudamore on telegraph system submitted by Council
Document	CD67	Proposed attachment to Statement on Common Ground submitted by appellant
Document	CD68	Planning Portal Application Overview and Drawing Issue Sheet submitted by appellant
Document	CD69	CAD Overview submitted by appellant on memory stick
Document	CD70	Camden Premises Study 2011 submitted by appellant
Document	CD71	Annual Monitoring Report 2010/11 submitted by appellant
Document	CD72	Camden Employment Land Review 2006 submitted by appellant

Document	CD73	Fitzroy Road Drawings and Photographs submitted by appellant
Document	CD74	Pre-application letter 16 September 2010 to the Council submitted by appellant
Document	CD75	Additional Drawings and Cross Section requested by Inspector submitted by appellant
Document	CD76	English Heritage Important Note 11 July 2010 submitted by Council
Document	CD77	Annual Monitoring Report 2009/10 submitted by appellant
Document	CD78	Annual Monitoring Report 2010/11 extract re. affordable housing submitted by appellant
Document	CD79	Updated 'as proposed' drawing bundle submitted by appellant
Document	CD80	Speaking notes submitted by Primrose Hill Conservation Area Advisory Committee
Document	CD81	Costs application submitted by appellant
Document	CD82	Costs application rebuttal submitted by Council
Document	CD83	Costs application final comments submitted by appellant
Document	CD84	Draft conditions submitted by Council
Document	CD85	Full version, Miller appraisal submitted by Council
Document	CD86	S106 Agreement 5 March 2012

ANNEX 2

CONDITIONS APPEAL A Conservation Area Consent

1) The development hereby authorised shall begin not later than three years from the date of this consent.

2) No demolition shall be commenced until a document detailing a programme and methodology for recording and historical analysis of the building prior to demolition and of any evidence of archaeological or historic interest found during demolition, has been submitted to and approved in writing by the Local Planning Authority. The recording and historical analysis shall be carried out as approved and the resulting records shall be submitted to the Local Planning Authority for agreement at the completion of the demolition and an agreed copy lodged with the National Monument Record and Camden Local Archives.

3) No demolition shall be commenced until a contract for the carrying out of the works of redevelopment of the site has been made further to the planning permission reference 2010/6627/P granted on Appeal reference APP/X5210/A/11/2161885.

CONDITIONS APPEAL B Planning Permission

1) The development hereby permitted shall begin not later than three years from the date of this decision.

2) The development hereby permitted shall be carried out in accordance with the following approved plans;
010-00B, -01A, -02, -03A, -04A, -05A, -B1B
020-01, -02, -03, -04
050-01, -02, -03, -04, -05

3) No development shall commence until details of 1.8m high privacy screens on the north-western terraces of residential units 8 and 10 have been submitted to and approved in writing by the Local Planning Authority and the approved screens shall be in place prior to the first occupation of those residential units. The screens shall be retained and maintained thereafter.

4) Details of the proposed ventilation and extraction plant for the Class B1 premises, including details of sound attenuation for any necessary plant, shall be submitted to and approved in writing by the Local Planning Authority and the approved measures shall be implemented prior to occupation of the commercial units and shall be retained and maintained as such thereafter.

5) No development shall commence until a scheme for protecting the proposed residential development from noise from plant and equipment has been submitted to and approved in writing by the Local Planning Authority. All works which form part of the approved scheme shall be completed before the first occupation of the residential units and shall be retained and maintained as such thereafter.

6) No development shall commence until the details of an engineer to be appointed to inspect, approve and monitor the construction of the basement together with details of their responsibilities has been submitted to and approved in writing by the Local Planning Authority.

The engineer shall be appointed in accordance with approved details prior to the commencement of both temporary and permanent works to the basement and their appointment and responsibility shall continue throughout the construction works. Any subsequent intended change or reappointment shall be agreed with the Local Planning Authority for the duration of the construction works.

7) The facilities for cycles hereby approved shall be provided prior to the occupation of any of the new units and shall thereafter be permanently maintained and retained for that use.

8) The lifetime homes features and wheelchair housing (units 8 and 9), as indicated on the drawings and documents hereby approved, shall be available for occupation prior to the first occupation of any of the other new residential units and shall be permanently maintained and retained thereafter.

9) No development of the relevant part shall commence until detailed drawings, or samples of materials as appropriate, in respect of the following, have been submitted to and approved in writing by the Local Planning Authority;

a) Plan, elevation and section drawings, including jambs, head and cill, of all new external windows and doors at a scale of 1:10 with typical glazing bar details at full size.

b) Typical details of new railings, balustrade and new gates at a scale of 1:10 with finials at full size, to include method of fixing.

c) Manufacturer's details of new facing materials including windows and door frames, metal cladding, gates, glazing, glazed link and balconies with a sample panel of not less than 1m by 1m demonstrating, the proposed colour, texture, face-bond and pointing of brickwork.

d) Section drawings showing protrusion of photovoltaic panels to the roof of Building 3 at a scale of 1:10 and samples of the new panels to be installed.

e) Samples of the materials and typical details to be used in the construction of the external surfaces of the extension to Building 1 (frontage building at 44 Gloucester Avenue).

The relevant part of the development shall then be carried out only in accordance with the approved details and samples.

10) No lights, meter boxes, flues, vents or pipes, and no telecommunications equipment or alarm boxes shall be fixed or installed on the external face of any of the buildings, without the prior approval in writing of the Local Planning Authority.

11) No development shall commence until full details of hard and soft landscaping and means of enclosure of all open areas (including terraces and balconies), have been submitted to and approved in writing by the Local Planning Authority. Details shall include a phased programme of works. The relevant part of the works shall not be carried out otherwise than in accordance with the details and programme thus approved.

Appendix 10

The Visualiser Ltd, Accurate Visual Representation Verifiable Photomontage Images. Methodology and Supporting Evidence

January 2015

Gloucester Avenue

London Borough of City of Camden

Application reference:

The Visualiser
159 Marlborough Road London N19 4NF. Tel : 020 7319 9900. www.thevisualiser.com

Proposed development:
Gloucester Avenue
London

Accurate Visual Representation
Verifiable Photomontage Images
Methodology and Supporting Evidence

The Visualiser Ltd
January 2015

Contents

1.0 Overview

This document has been prepared by The Visualiser Ltd to explain the methodology and practices leading to the final verified view images.

The verified images presented in this document were produced to allow visual assessment of the proposed development of Gloucester Avenue, London.

Best practice standards for producing accurate visual representation were maintained. Recommendations and reference from the following documents: Landscape Institute Advice Note (January 2011) 'Photography and Photomontage in Landscape and Visual Impact Assessment', and where relevant, London Plan 2011 Implementation Framework (March 2012), London View Management Framework Supplementary Planning Guidance: Appendix C: Accurate Visual Representations, were implemented to provide an impartial, objective and as realistic as possible view of the proposed development with acceptable levels of accuracy, replicability, transparency of process and openness to scrutiny.

The photomontaged verified images show a render, derived from a 3D computerized model of the development, superimposed on photographs from selected viewpoints around the site.

The images are meant to serve as a visual tool by accurately representing the scale, form, massing, proportion and relationship to other structures, skyline and points of interest, thus allowing a better evaluation of the proposed development's visual impact.

Note(citation from Landscape Institute advice note 01/11):
Two-dimensional photographic images and photomontages alone cannot capture or reflect the complexity underlying the visual experience, and should therefore be considered an approximation of the three - dimensional visual experiences that an observer would receive in the field.

This document provides a step-by-step description of how, based on current best practice techniques, The Visualiser produced an accurate representation of the proposed scheme in pictorial form in a transparent, structured and replicable production procedure.

Supporting Statements and evidence of the Surveyor team are included.

This document also sets out additional information in relation to aspects of the production process such as: viewpoints, photography, Cad (computer aided design) 3d modeling, camera matching methodology and some of the verification that have been carried out to ensure the accuracy of photomontage images.

The responsible parties for the preparation of the verified views set out in the following pages comprise:

Photography:
Nitsan Lehavi
The Visualiser Ltd
Unit 111c, 159 Marlborough Road
London N19 4NF
Tel: 0207 319 9900

Gloucester Avenue, Exisiting Buliding 3D Model by

21ST ARCHITECTURE LTD
314 Goswell Road
London EC1V 7AF
Tel: 020 7952 0252

Gloucester Avenue, Proposed Building 3D Model by

21ST ARCHITECTURE LTD
314 Goswell Road
London EC1V 7AF
Tel: 020 7952 0252

Production of verifiable images

The Visualiser Ltd
Unit 111c, 159 Marlborough Road
London N19 4NF
Tel: 0207 319 9900

Survey of existing anchor points and camera locations

Datum Survey Services Ltd
Brickfield Business Centre
Brickfield House, High Road, Thornwood, Epping
Essex CM16 6TH
Phone: 07977 111935

2.0 Methodology

2.1 Photography

The photographic method used for the baseline photographs i.e, combination of lens, camera format and final presentation of image deployed were chosen to best represent the relevant landscape which includes both the site where the scheme is proposed and its context so that both the proposal's appearance and its place within its environment can be recognized and understood.

Photographic methodology is compliant with Landscape Institute Advice Note (January 2011) 'Photography and Photomontage in Landscape and Visual Impact Assessment', and where relevant, London Plan 2011 Implementation Framework (March 2012), London View Management Framework Supplementary Planning Guidance: Appendix C: Accurate Visual Representations,

Information on the camera, lens, OS grid coordinates for the viewpoint, angle and direction of view, date, time, weather and lighting conditions is included and the horizontal field of view is indicated in each case.

The base photography covered 7 view points selected for visualisation. To portray tree leaf coverage variation, base photography was acquired on the 29th September 2014 and 16th October 2014 . Each of the views includes the original time in which the baseline image was taken.

All photography was done using a Canon 5d Mark II digital Camera mounted on a Manfrotto tripod.

2.1.1 Viewpoints

Viewpoint locations and views directions were instructed by

Tom Slater
21ST ARCHITECTURE LTD
314 Goswell Road
London EC1V 7AF
Tel: 020 7952 0252

2.1.2 Perspective

The correct viewing distance, i.e. the distance at which the perspective in the image correctly reconstructs the perspective seen from the point at which the photograph was taken, is calculated for each of the views, thus allowing a close as possible match to the way a human eye will perceive the perspectives.
The viewing distance and the horizontal field of view together determine the overall printed image size. Any print should be accompanied with a recommended viewing distance. However it is accepted that the viewing distance for hand-held photographs and photo-montages should be between 300mm and 500mm (SNH 2006, para 126) as an added measure of accuracy, the exact calculated metric viewing distance for an A3 print (400mm width) for each view in this document according to dimensions of the horizontal field of view is included in Views Table 3.2.

2.2 Site survey

The site survey was produced a team of certified Surveyors. Between 7-15 anchor points were identified on the each photograph and surveyed. The surveyed points are used as anchors for the precise matching of the 3d model rendering and the baseline photograph.
The methodology statement by the surveying team follows

Survey Brief

We were commissioned to survey and record co-ordinates (Eastings, Northings and Elevation) of known points of detail located within the vicinity of the Site known as 44 Gloucester Avenue , Hampstead . The points of detail were to be identified on 6 photographic views provided by The Visualiser Ltd.

Survey Dates
23rd January 2015

Survey Equipment

The survey works were undertaken using a Leica TCRA 1205 Total Station instrument, which incorporates long range reflector lens electronic distance measuring equipment together with a Leica GPS SmartRover.

Accuracy

Each individual observation set-up achieved an accuracy of + or – 45mm to Ordnance Survey grid / datum.

Presentation

The survey results were presented in table format as a Microsoft Excel Spreadsheet document and numbered photographs in PDF format.

2.3 3d Modelling

The 3d model of the proposed scheme geometry is based on a 3d Sketchup format model constructed by 21ST ARCHITECTURE Architects. The model was edited by The Visualiser team to reflect design changes. Its geometry and material schedule conformed to the 3d sketchup model from the scheme's architects 21ST ARCHITECTURE.
The 3d model was orientated and positioned according to ordnance survey coordinates and height, survey points were added and crossed checked.

2.4 Camera matching photomontage and composition

Photomontages seek to imitate a photograph of the actual scene as modified by the insertion of the proposed development.
Explanatory text is provided to describe the procedure used to fit the rendered image to the underlying photographic view.

The first step includes insertion of the surveyed points into a three dimensional electronic drawing space in 3Dstudio Max (Autodesk) which contains an ordnance survey drawing of the site ,thus establishing the relation between the existing site and the surveyed points. Each of the points is checked against its existing environment description and confirmed.

The survey points are checked for abnormalities and omitted if necessary.

Camera matching is performed by accurately locating the anchor (survey) points on the backdrop of the baseline image corresponding to each view. This process is repeated for each of the selected views. This process is performed with an with close attention to detail and the highest possible accuracy.

The horizon line is calculated and marked on the Baseline photographs. Camera matching process is performed again and the horizon line is checked against the backdrop. The matched camera location, view direction and lens are checked against the real camera that was used for the photography.

Once camera matching has been achieved and additional checks have confirmed the accuracy of the 3d electronic space coordinates, the 3d scheme model is rendered onto the back plate photograph using 3d studio max.
To increase accuracy and minimize distortions , in certain visuals, an additional camera match was performed, as an added measure, using a 50mm lens section of the original baseline photograph.

Lighting conditions are set so as to simulate realistically the conditions in the site when the photography was performed. Sun light position and height settings are set to correspond accurately to the existing photography in terms of time of year, time of day and site location. The scheme model is then rendered against the backdrop of the corresponding baseline photograph for each of the selected viewpoints.

2.5 Post production

Final composition and checks of the match is done in Adobe Photoshop software where the rendered image is composed on its corresponding baseline photograph.

A visual treatment process using Adobe Photoshop follows in order to make the rendered elements portray the scheme as the designer architects have envisioned it as well as creating a visually aesthetic blend with the existing photograph's elements.

The scale and position of the featured scheme are already set and do not change at this stage which is more artistic in nature and requires interpretation from the visualiser who consults closely with the scheme's architects regarding the pictorial interpretation of textures and materials depicted in the rendered scheme.

This stage can include:

1. Bringing forward foreground elements (obscuring the proposed scheme) such as lamp posts, trees, buildings.

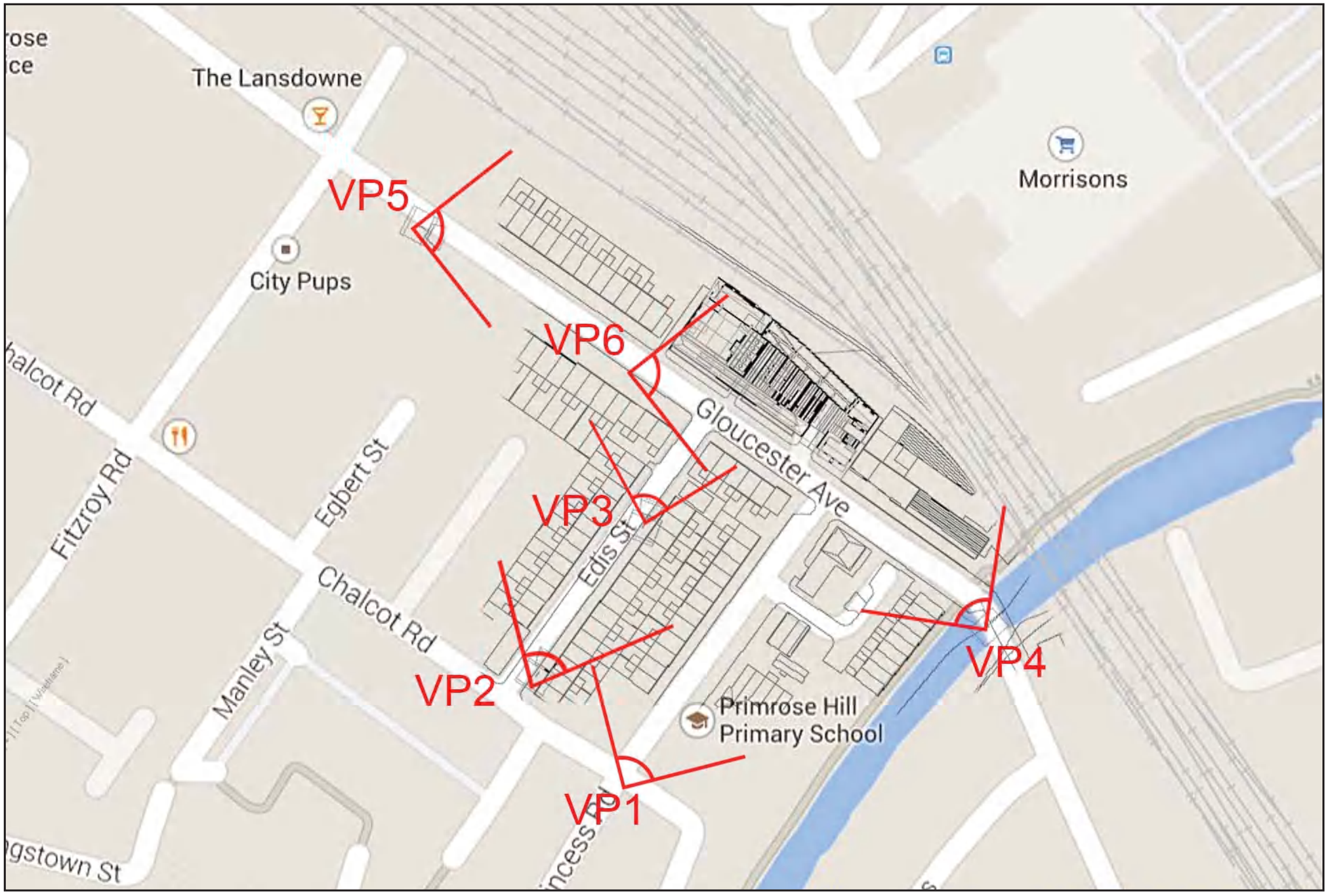
2. Colour balancing (contrast, saturation etc') according to lighting and general image conditions.

3. Applying depth of field effects

note: on request of the client some minor visual elements (cars, electric wires, signs) have been retouch to improve the visual realism of proposed scheme.

3.0 Supporting Evidence

3.1 View point map



3.2 Views Table

Location	Photo Ref.	Distance from Site [m]	Date	Time	Lens [mm] Cropped (Original)	Optimal Viewing Distance [mm] for A3 - 400 mm width print	Type
Viewpoint 1	8895	132	14/01/2015	10:36	24	266	Wire Line View
Viewpoint 2	8873	119	14/01/2015	10:31	24	266	Rendered View
Viewpoint 3	8849	58	14/01/2015	10:23	24	266	Rendered View
Viewpoint 4	8907	73	14/01/2015	10:41	24	266	Rendered View
Viewpoint 5	8947	120	14/01/2015	10:58	24	266	Rendered View
Viewpoint 6	8927	23	14/01/2015	10:48	24	266	Wire Line View

VP-1

Surveyed points ordnance survey coordinates for baseline photograph number 8895
Distance from Camera to Site (measure on centre of image line) - 132 m

Point ID	Easting	Northing	Ortho Height
VP1	528268.695	183884.105	32.484
1.1	528265.406	183907.172	42.514
1.2	528269.899	183913.705	42.533
1.3	528276.141	183922.765	42.561
1.4	528285.391	183936.148	42.567
1.5	528294.695	183949.425	41.965
1.6	528268.788	183912.168	35.976
1.7	528277.967	183925.480	35.933
1.8	528287.288	183938.866	35.872
1.9	528331.072	184000.286	39.090
1.1	528336.784	183996.454	39.091
1.11	528297.663	183918.604	53.867
1.12	528290.466	183905.834	53.018
1.13	528285.950	183895.373	42.675
1.14	528288.377	183899.026	42.680
1.15	528292.506	183908.386	37.879
1.16	528294.934	183912.271	41.617