

RAILWAY SIGNAL BOXES A REVIEW

John Minnis



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JOHN MINNIS

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ISSN 2046-9799 (Print)

ISSN 2046-9802 (Online)

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SUMMARY

This report, which forms the principal product of NHPP 4B3.103, is a response to the Network Rail resignalling plans announced in the autumn of 2011 which envisage the concentration of railway signalling in 14 signalling centres and the consequent closure of all remaining mechanical signal boxes on the national rail network with 80% going within the next 15 years. It provides a national review of signal boxes, both operational Network Rail boxes, and those out of use, on heritage railways, and in museums. It identifies the most significant remaining examples and makes recommendations as to boxes to go forward for assessment for listing. It aims to fill in gaps in existing listings ensuring that a representative sample of the principal types is protected.

ACKNOWLEDGEMENTS

I would firstly like to thank Peter Kay, for his generosity in discussing queries arising from his *Signalling Atlas* and commenting on a draft of this report, for providing me with details of the 1985 listing proposals for English Heritage and, most importantly, for his involvement in the *Signalling Atlas and The Signal Box, a Pictorial History and Guide to Designs*, without which this project would not have been possible. Secondly, John Tilly for kindly making his photographs of signal boxes available and for allowing me to reproduce them in this report. Charles Weightman has also provided some of his photographs for the report for which I am grateful. Other members of the Signalling Record Society, notably Derek Coe, have provided information. At Network Rail, Tom Higginson, Head of Town Planning, has been my first point of contact and I am grateful to him and his colleagues, Laura Addey and Andrew Robinson, for their help. At English Heritage, Tony Calladine, who has responsibility for designation of industrial buildings, has discussed the issues and commented on drafts of the report, as has Alan Johnson while Kathryn Morrison has edited the text.

DATE OF RESEARCH

October 2011 - February 2012.

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INTRODUCTION

The signal box is a building type that is unique to railways, although with a precursor in the shape of the semaphore towers erected during the Napoleonic Wars. Signal boxes had their origins in the 1840s with signalling platforms accompanied by a hut for the signalman and towers at junctions. The signal box as we know it today, i.e. a covered and glazed structure housing levers from which both signals and points are worked, was the invention of John Saxby who made a significant advance in mechanical interlocking between points and signals for which he obtained a patent in 1856. He subsequently went into partnership with John Farmer in 1863 to form the signalling contractor, Saxby & Farmer. Saxby's first boxes dated from 1857 and a distinctive building type was created.

The basic form of the signal box as outlined above, a largely glazed structure containing levers, was established by Saxby. The only major subsequent addition was an enclosed lower storey below the signalman's operating floor containing the locking apparatus.

Over half of the signalling equipment used by the railways prior to 1923 was supplied by private signalling contractors, rather than built in-house by the railway companies. Many signal boxes were therefore built to contractors' designs rather than those of railway companies. The largest of these companies were Saxby & Farmer, Stevens & Sons, McKenzie & Holland, the Railway Signal Co, Dutton & Co and Evans, O'Donnell & Co. Each had distinctive designs, often employing several different ones at any one time.

In addition, many of the railway companies had their own designs and these evolved over time. Some companies, such as the London & North Western Railway and the Midland Railway, favoured standardisation so that only minor changes occurred to their boxes from the 1880s to 1923 while others, such as the Great Eastern Railway, produced many different designs.

Within the basic form set by the function of the building, there was scope for almost infinite variety in the details of a signal box. Because the structures were often highly visible at stations or level crossings, an effort was made to ensure that they were not purely utilitarian and well-designed details and applied decoration mean that they represent a particularly satisfying meeting point between form and function. Size and shape can also vary greatly. Boxes may be long or tall, large or small, supported on gantries over tracks or cantilevered from a narrow base. They may be built entirely of timber, have a brick base with a timber superstructure or be all brick. Great differences may be seen in the design of window frames, eaves brackets, bargeboards, and cladding.

The signal box received little study as a building type until the 1980s. One of the first attempts to classify the different designs, covering only the south east, was made by the author in 1976 and a number of monographs on the practice of individual companies appeared soon after but it was not until the publication of *The Signal Box: a Pictorial History and Guide to Designs* in 1986 that the full history of the signal box was set down. The book was produced by the Signalling Study Group, comprising six writers under the editorship of Peter Kay. It established a typology of signal box designs which has been universally adopted and has been employed in list descriptions.

The number of traditional mechanical signal boxes has been reduced steadily from around 10,000 in 1948 to under 500 in England today with both line closures and new signalling technology contributing to the decline in numbers. Signal boxes are a building type that is inherently attractive to many people and proposals to demolish them often provoke a strong local response, both from those interested in railways and others to whom they represent a significant local landmark, with the consequence that each resignalling scheme results in a number of requests to spot-list boxes.

Network Rail announced plans in August 2011 to concentrate railway signalling in 14 rail operating control centres. The process is expected to take 30 years in all but 80 per cent of the new signalling installations would be in place within 15 years. Many of the remaining mechanical signal boxes currently in use on the national railway network will therefore be taken out of use in the next few years. Consequently, a national overview of significance of surviving signal boxes was included as Activity 4B3.103 of the National Heritage Protection Plan.

The Project

The *Designation Selection Guide for Transport Buildings* (English Heritage, 2011) highlights the need to protect a representative sample of the principal types and the national overview aims to ensure that those boxes protected are truly representative insofar as they include all the principal designs of the major signalling contractors and of each of the English railway companies.

This report is based on a desk-based rapid assessment of surviving signal boxes, both those still in use on the national railway network under the ownership of Network Rail and those out of use, preserved or used on heritage railways. Two previous surveys have been carried out. The first, an Industrial Monuments Survey carried out c.1980, proved to be unsatisfactory and a second limited assessment was carried out at the request of English Heritage by members of the Signalling Study Group, headed up by Peter Kay, who prepared a report making recommendations for listing, which was submitted to English Heritage in 1985 and formed the basis of a number of subsequent signal box listings. These included many of the most significant examples: Billingshurst, the last survivor of the earliest type of Saxby & Farmer designs; Weston-super-Mare, the oldest surviving signal box; Shrewsbury Severn Bridge Junction, the largest mechanical box, and Woking, a streamlined moderne design. However, since then, numerous boxes have been spot-listed on an individual basis and it has become evident that ad hoc listing has led to a situation where there is a degree of imbalance in terms of the boxes that have been designated: while there are several listed examples of some designs, there are none of others and some railways and signalling contractors are seriously under-represented. For example, there are no boxes from the South Eastern & Chatham Railway listed although the two companies that made up the SE&CR had some of the most distinctive designs; there are only three London & North Western Railway boxes; there is but one Lancashire & Yorkshire Railway box, and six from the Great Western Railway, one of the largest British railway companies. There is consequently a need for a further review, in the light of changing circumstances, of the building type as a whole.

There is exceptionally comprehensive information available on the building type in Peter Kay, *Signalling Atlas and Signal Box Directory*, 3rd edition, (Signalling Record Society, 2010). This lists all surviving signal boxes, both on the national network and those closed, out of use, on heritage railways or re-used for other purposes. It gives such details as location, originating railway company, date of construction, date and type of lever frame, the type of box (using the typology established in The Signalling Study Group, *The Signal Box: a Pictorial History and Guide to Designs*), whether the box has been altered in recent years by the insertion of plastic double glazing, recladding, etc. The volume is highly accurate and has been produced under the auspices of the Signalling Record Society, whose membership includes the leading historians in this highly specialised field and both serving and retired senior signalling engineers. The only area in which any inaccuracy has been found lies in the details of which boxes have been listed, the numbers of boxes noted as listed in the Directory being somewhat in excess of those actually listed. This is due to the difficulty experienced in determining the extent of listings prior to the launch of the National Heritage List for England in 2011.

The methodology employed for this project involved working through the entries in the Signalling Atlas, comparing them with published photographs and those on the internet notably the site of photographs maintained by John Tilly (www.tillyweb.biz) and assessing them in terms of how they relate to those already listed.

- Were there designs of which no example is listed?
- Were there railway companies or signalling contractors whose work is significantly under-represented?
- Was the internal locking apparatus rare or interesting?
- Did the box have group value?
- Were there boxes of considerable size or height, or particularly small in scale, or that were architecturally especially elaborate?
- Were there any that represent particular milestones in the history of railway signalling that were not already listed?

To gain a complete picture, it was necessary to consider both Network Rail boxes and those in other hands. To have merely considered operational Network Rail boxes would have created a false impression in some cases, where, for example, there were few survivors on the national network but a number on heritage railways. The project also reviewed the currently listed boxes to determine whether they were the best examples of their type and sought to check and upgrade the designation list entries. A number of boxes were found to have been demolished and these are noted in Appendix I. A number of errors in list descriptions, mainly related to dating of boxes were found, especially in those cases of boxes listed prior to the publication of *The Signal Box: a Pictorial History and Guide to Designs*.

An additional factor that has complicated the selection of boxes for consideration for assessment for designation is the policy adopted by Railtrack and Network Rail of modernising signal boxes. It is undeniable that modernisation of these buildings was necessary. One cannot expect staff in the twenty-first century to work in what were, in many cases, nineteenth-century working conditions. Ill-fitting, draughty windows and inadequate sanitation had to be addressed. However, the work was carried out with varying degrees of sensitivity. Some boxes, although given uPVC double glazing, have had

this done in a way which follows the pattern of the original glazing, generally taking the form of sliding sashes, and has glazing bars that echo those of the former glazing. Others, however, have been given glazing with no glazing bars or have had glazing installed that bears no relation whatever to what was there before. Clearly, as glazing forms such a large part of the external appearance of a signal box, changes on this scale can have a considerable impact. In addition, some boxes have had their timber boarding covered or replaced with white plastic cladding and a number have undergone transformations so considerable that, externally, they look like new buildings with all the details that enabled them to be identified as being of a particular type removed.

The work has not been carried out consistently throughout the country. In the north west, almost every box with any expectation of continued existence was modernised, often in a radical way. In other parts of the country, change has occurred more slowly and an attempt has been made to retain the character of the boxes concerned. In East Anglia particularly, there are numerous boxes that have undergone very sensitive limited restoration, probably due to many of them being scheduled for early closure. What this means in practice is that if originality were the only factor, then certain companies would be very poorly represented. For example, in the case of the LNWR and the L&YR, both of which are currently under-represented in terms of listed boxes, the majority of the surviving boxes are in the north west and have had extensive modernisation. It has therefore been necessary to select some boxes for assessment which have had their windows replaced as they are quite simply the only examples of their kind left.

A further consideration is that the selection guide states that preference is now given to examples that have a minimal impact on rail safety, such as those boxes on heritage railways. Where there are numerous examples of boxes surviving with several on heritage railways, as, for instance, in the case of Great Western Railway Type 7 designs, then account has been taken of this and examples put forward from heritage lines. In many cases, however, the only remaining examples of significant designs are still in operational use and, should they be listed, the subsequent management of these boxes will require careful consideration as to how their long term future may be best secured.



Figure 1 Totley Tunnel signal box in 2003 before renovation. © John Minnis



Figure 2 Totley Tunnel signal box after renovation. © John Tilly

The selection of signal boxes for assessment for listing that has been made is a bare minimum ensuring at least one example is retained of the principal designs. The boxes in this category, listed in Appendix 2, number some 68, out of a total of about 500 pre-1945 structures and are indicated in the report by the use of **bold** type. Boxes not included in this report are not necessarily without historical or architectural interest and other examples built to the same or similar designs as those selected for inclusion may be of equal merit. It is to be hoped that efforts are made to ensure the survival of at least some of these other boxes, many of them good examples of their type, either in situ or by removal to other sites. In particular, there are a number of Midland Railway, Great Eastern Railway, Great Northern Railway and Great Central Railway/Railway Signal Co boxes in good original condition that have not been shortlisted because there are already a number of listed examples. The numerous signal boxes on the Settle and Carlisle line make an important contribution to the visual unity of this significant piece of Victorian railway engineering and their continued existence should form part of the overall heritage management of this line.

THE REVIEW OF SIGNAL BOXES

I. Contractors' Designs

Railway Signal Co

The Railway Signal Co boxes developed out of the designs by the Gloucester Wagon Co from the early 1880s. The boxes had a window in the end gable and elaborate bargeboards as distinguishing characteristics. The attractive design was built widely and 13 survive with Network Rail of which three, Appleby (1885), Elsham (1885) and Kirton Lime Sidings (1886), all built for the Manchester, Sheffield & Lincolnshire Railway, are listed. The design seems well covered by the listed examples although some of the other survivors, which are in good original condition, might well appeal to people wishing to move them for re-use.

Dutton

One Dutton box, Oswestry South on the former Cambrian Railway is listed in situ and two others have been moved from Llansantffraid, Wales, to Oswestry and Shrewsbury. Oswestry South (1882) is an excellent example that retains the highly characteristic Dutton porch and will serve to represent this manufacturer.

Evans O'Donnell

Evans O'Donnell built some 40 boxes between 1894 and 1903 to their own design. Two survive, Ryde St John's Road, which operates the Isle of Wight's signalling system, (built c1899 and which was moved from Waterloo East to its present location in 1928) and the extraordinary tall box installed at **Maidstone West** in 1899. This has a two-storey timber superstructure elevated from the ground on a narrow brick base to give the signalman adequate views along the line. A key feature of Evans O'Donnell boxes is the pattern of glazing bars with just a single horizontal bar in the upper part of the window. Ryde has had replacement windows of somewhat unsympathetic appearance installed recently, Maidstone is still in original condition.



Figure 3 Maidstone West. © John Tilly

Type I

Two boxes of this type remain, both on the former North Staffordshire Railway. Leek Brook Junction (c.1872) has been listed but **Tutbury Crossing** (c.1872) is still in use on the national network. Although its windows have been replaced, the box is otherwise little altered.



Figure 4 Tutbury Crossing.
© John Tilly



Figure 5 Highley.
© John Tilly

Type 3

Of these gabled boxes, built between 1875 and 1921, five are still in use with Network Rail and a further five remain, one Baschurch (1880) (listed) and three on the Severn Valley Railway, all good examples in their original locations and in excellent condition; **Bewdley North** (1878), **Bewdley South** (date not known) and **Highley** (1883). All three would be potential listing candidates.

Saxby & Farmer

Type 5

The Saxby & Farmer Type 5 design was one of the most successful and long-lived of contractors' signal box designs, the first being built in 1876 and the last in 1898. With its distinctive round cornered toplights and eaves brackets, it was also one of the most well-proportioned and distinctive. Examples were built on more than a dozen railways but the design was particularly associated with the London Brighton & South Coast Railway, with which company John Saxby pioneered the use of interlocking. 11 Type 5 boxes are still in use on Network Rail with a further 10 on heritage railways or otherwise preserved.

Four boxes (all no longer in active use) are currently listed: Havant (1876), a brick box originally of three bays that was enlarged by two bays in 1938 in matching style and also extensively modified with steel-framed windows inserted in the rear elevation; Isfield (1877) a small brick box, typical of the majority of boxes built to this design; Holmwood, similar to Isfield but platform mounted, and Crawley (1877), a tall box with a timber superstructure on a brick base.

Two other small Type 5 boxes form part of groups with other railway buildings. **Berwick** (1879, retaining its original 1879 lever frame, one of the oldest still in regular use on the



Figure 6 Berwick.
© John Tilly

rail network), although it has had its sashes replaced in uPVC, is part of a group that includes a station building of 1846, extended in 1890, a rare surviving example of a waiting shelter of 1877, station cottages of 1846 and 1892, in all one of the most complete wayside country station ensembles.

Pulborough (1878), in good original condition, is part of a well-preserved rural junction station. The buildings at each station are not currently listed but might well be considered for designation. One other small box is

Uckfield (1882) which was preserved

in situ as a museum by the local community. It is one of only two surviving all-timber Type 5 boxes and is in excellent and original condition.



Figure 7 Pulborough. © John Tilly

The largest and most impressive Type 5 to survive is the 1882 box at **Eastbourne** with a timber superstructure of five bays oversailing a narrower brick base. The base is panelled with all its locking room windows remaining. The pointed arches to the locking room windows have polychrome detailing. In style it complements the exuberance of the listed Eastbourne station buildings. The box is one of the best mechanical signalboxes to survive in the country.



Figure 8 Eastbourne. © John Tilly

Chichester (1882), too, has a timber superstructure on a panelled brick base but is of more conventional appearance with round arched locking room windows, now bricked up. Both boxes have had their lever frames replaced with panels but have value as buildings in their own right, and are considerably better examples of the design than the listed box at Havant, although the 1930s alterations there were given as a reason why that box was listed.



Figure 9 Chichester. © John Tilly

Type 6

This was the Saxby & Farmer design used on their two contracts with the LNWR and the L&YR between 1869 and 1876. It is typical of these very early boxes, plain in appearance with shallow operating room windows. A couple of the Type 6 boxes, **Daisyfield Station** (1873) and **Horrocksford Junction** (1873), have managed to survive for almost 140 years: neither is listed. Both boxes have had their windows replaced and steps replaced by metal ones but their rarity and early date renders them worth consideration.



Figure 10 Daisyfield. © Charles Weightman



Figure 11 Horrocksford Junction. before renovation.
© John Tilly



Figure 11a Horrocksford Junction after renovation.
© Charles Weightman

Type 12

The Type 12 design was used on the South Eastern Railway and the London Chatham & Dover Railway between 1890 and 1894. Five remain in use on Network Rail, the tops of two others are preserved on heritage railways and one, Wye stands unused. Their roofs are gabled rather than the hipped type found in earlier Saxby & Farmer designs and have generous overhangs to the eaves. None are listed. Three of the boxes, **Rye** (1894), **Wye** (1893) and **Wateringbury** (1893) are in close proximity to listed stations and might be considered on group value grounds in addition to their intrinsic interest.



Figure 12 Rye. © John Tilly



Figure 13 Wateringbury.
© John Tilly

Stevens & Sons

There is one survivor of the early Stevens signal boxes, built between 1871 and the 1880s, that were once employed on many lines and are especially identified with the London, Chatham and Dover Railway. Although it may appear not especially prepossessing, the box at **Grain Crossing** (1882) retains the distinctive Stevens characteristics of batten and board construction and ornamental edging to the gable timbering. The windows have been replaced but as the Stevens boxes were noted for their sparse provision of glazing bars, its character has not been as altered as many boxes. Two later Stevens boxes survive at Stalybridge and Northenden Junction but both have been extensively altered.



Figure 14 Grain crossing. © John Tilly

Yardley/Smith designs

E S Yardley & Co was a small firm of signalling contractors, the vast majority of whose work was carried out for the Lancashire & Yorkshire Railway. William Smith took over the firm about 1876. During the ten years between 1872 and 1882, they supplied much of the L&YR's signalling requirements. Their boxes were divided into two types, one with toplights above the operating room windows and one without. Three examples only remain of this contractor's boxes: Bromley Cross (1875), **Hensall** (1875), both with toplights, and Milner Royd Junction (1874) without.



Figure 15 Hensall. © John Tilly

Bromley Cross forms a group with one of the few small station buildings to have survived in this part of Lancashire, while Hensall does the same with a very well preserved station in Yorkshire. Milner Royd Junction represents the other variety and retains its original nameboard. Unfortunately, all three have had their windows replaced in uPVC but their position as the sole surviving examples of this firm's work, once common throughout the L&YR system, renders one of them worth consideration for listing. Milner Royd Junction's location is less amenable to preservation than the other two which are located at stations. Its L&YR nameboard has been designated by the Railway Heritage Committee.

2. Railway Company Designs

Pre-grouping designs (pre-1923)

A) Southern Railway constituent companies

South Eastern Railway

The South Eastern Railway had a unique design of box that differed considerably from those of other railway companies. It closely resembled its favoured form of station design in being constructed of clapboarding with a hipped roof. What set it apart from other companies' practice was the employment of ordinary plate glass sash windows of domestic appearance set at intervals into the façade instead of the continuous glazing favoured by the vast majority of other railways. The only other company to use sash windows in this way was the North British Railway which generally used them in the context of all brick structures. Early boxes from the North

Eastern, Great Western and South Western companies also had small windows but tended to use sliding sashes. The SER pattern was established in the early 1870s and examples continued to be built well into the 20th century. Although there was a considerable family resemblance, the boxes were all slightly different to each other with none of the rigid standardisation engendered by the use of prefabricated components by such companies as the Midland Railway.

These boxes were once ubiquitous throughout the SER system and a considerable number survived into the 1970s. There are now only six examples left with Network Rail. Parts of two others exist, the top of Borough Market Junction at the National Railway Museum and the top of Barham on the East Kent Railway heritage line. None are currently listed. Of the six Network Rail examples, Stone Crossing is a much altered hut that also serves as a booking office for the station of the same name while Bopeep Junction (1912) is a late and non typical box on a brick base with a gabled roof. East Farleigh (1892) harmonises visually with the adjacent listed timber station buildings of 1844 in the same style but has been modified with uPVC replacement windows which have replaced the highly distinctive original sash windows. The three remaining boxes are all in largely original condition and control level crossings. **Cuxton** (date unknown) and **Snodland** (1870s) are both located at stations with attractive station buildings, both being listed grade II. Snodland has gained a lengthy glazed extension at some point. The station buildings at Chartham were demolished in the 1970s and replaced by simple shelters so the signal box (c.1880) is the only structure of historic interest remaining there. Cuxton is probably the best remaining example of the characteristic SER design.



Figure 16 Cuxton. © John Tilly



Figure 17 Snodland. © John Tilly

London Chatham & Dover Railway

The London Chatham & Dover Railway's role as a major suburban system with many junctions led it to achieve full interlocking on its system at an early stage, in 1879. Most of its boxes were designed by signalling contractors, principally Saxby & Farmer and Stevens & Sons, but the company developed its own design in the 1870s. There is just one box built to a LC&DR design remaining, **Shepherdswell** (c.1878). The box has vertical timbering on a brick base and window frames with a distinctive rounded top to the glazing of the sash. It is in largely unaltered condition and is near one of the original East Kent Railway stations which remains largely intact. It retains its original LCDR frame - again a great rarity.



Figure 18 Shepherdswell. © John Tilly

South Eastern & Chatham Railway

Following the establishment of the South Eastern & Chatham Companies Managing Committee in 1899, designs used on both the SER and LCDR evolved. The favoured design was developed from the Saxby & Farmer Type 5 with square, rather than rounded, corners to the toplights and sashes. **Canterbury East** was built c.1911 and has a timber superstructure elevated on steel or iron piers to provide good vision for the signalman over an overall roof that was removed in the late 1950s. The design of the superstructure is that of SECR type with shaped timber brackets at eaves level. Elaborate

boxes on steel bases of this type were used when vision was obstructed. They were once fairly plentiful but are now extremely rare. The box has the other known surviving LC&DR frame.



Figure 19 Canterbury East. © John Tilly

A gabled version of the SE&CR design appeared in 1921 and was continued by the Southern Railway (classified as their Type 11a). **Aylesford** (1921) was the first of the type to be built and was the sole one to be constructed under SE&CR auspices. It forms part of a group with the listed station buildings.



Figure 20 Aylesford.
© John Tilly

London Brighton & South Coast Railway

LB&SCR Type 1

The sole surviving example of a Type 1 box, a design intended to complement the branch line stations designed by T. H. Myres, is at Horsted Keynes on the Bluebell Railway and is listed.

LB&SCR Type 2

From 1880, the LB&SCR produced its own signal box designs. Initially they resembled to some extent the Saxby & Farmer Type 5, the main differences being the absence of toplights above the operating room sashes, the use of a large and ornate iron ventilator on the roof taking the form of a finial and, in some cases, the use of valencing along the eaves, similar to that of a station platform canopy. These boxes were once common, especially in the London area. There are only a handful of survivors: Littlehampton (1886); Hampden Park (1888), and Plumpton (1891), all still operational Network Rail boxes, and the top portion of Uckfield Shunting Box (1900), in use as a bird watching hide at Lewes. Plumpton is listed, forming part of a group with the other station buildings and a crossing keeper's cottage.



Figure 21 Littlehampton. © John Tilly

Littlehampton (which has a 1901 LB&SCR pattern lever frame) is the only box to retain the ornate valencing around the eaves that is such a distinctive feature of the design.

LB&SCR Type 3

In 1898, the LB&SCR developed a completely new design of signal box, a neat gabled design built in large numbers in all timber and brick base variants over the next twenty years, both as replacement boxes and for the extensive widenings of the Brighton main line that were carried out from 1898-1906. Barnham (1911) was the last survivor on Network Rail. A large all timber box, it was rejected for listing but moved locally for preservation and regrettably severely damaged soon after by arson although it is intended to rebuild the structure. There is however one further survivor, Bosham, which following closure in 1992, was moved to a garden in Middleton-on-Sea, West Sussex.

London & South Western Railway

Only 12 boxes to LSWR design, seven of them of Type 4, are still in use on the rail network, one of the smallest proportions for a major company.

LSWR designs are not well represented among listed boxes with only three of Type 1 Crediton (1875), Instow (1874) and Topsham (1870s), and one Type 2, Bollo Lane Junction (1878) being listed.

Type 3

Petersfield (1880s) and **Bournemouth West Junction** (1888) are well-preserved boxes of the Type 3 design hitherto not represented by listed examples. Petersfield is a particularly striking box with the timber superstructure oversailing the panelled brick base. It has both front and side elevations fully glazed with toplights and valencing at eaves level. Bournemouth West Junction, latterly controlling Bournemouth carriage sidings, is a more typical example of the design, once widely found across the LSWR system.



Figure 22 Petersfield. © John Tilly

Type 4

The Type 4 was introduced in 1895 as a complete change with brick construction and the windows placed at the corners of the building. The long closed box at **Woolston** (1901) merits consideration as does the box at **Haslemere** (1895) a larger platform mounted structure. The all brick design had a modern feel to it, emphasised by the window frames with curved tops (replaced in uPVC at Haslemere). Woolston (still owned by Network Rail) has lost its frame but does retain its very distinctive original windows and forms a group with the adjacent listed station building. Haslemere retains its original 1895 Stevens frame.

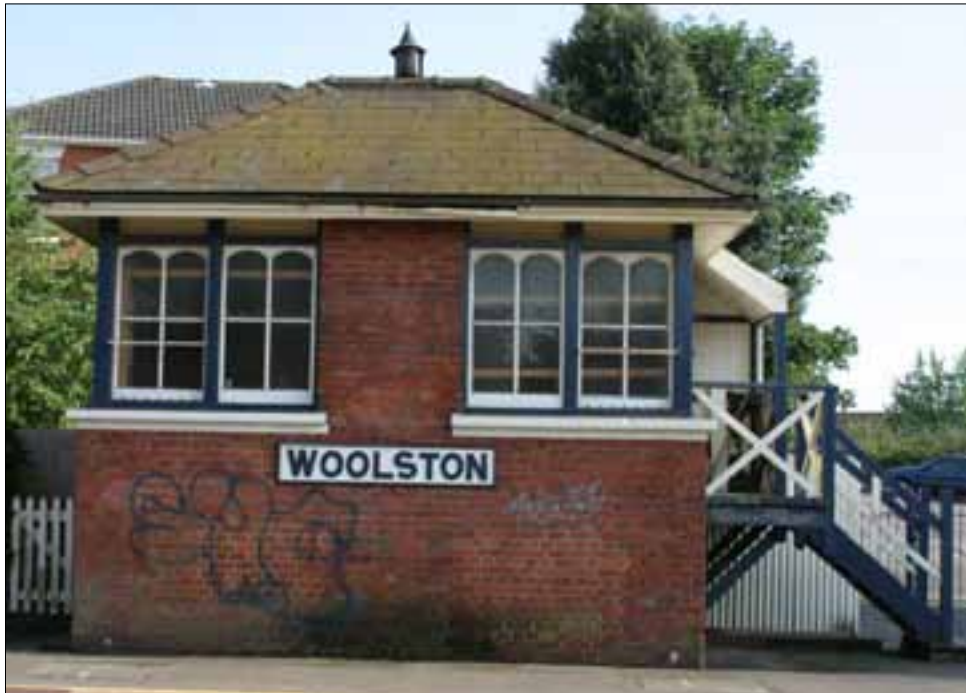


Figure 23 Woolston. © John Tilly



Figure 24 Haslemere. © John Tilly

B) London Midland & Scottish Railway constituent companies

Furness Railway

The Furness Railway, although a relatively small company, had a number of attractive and varied signal box designs. Three Furness signal boxes are currently listed, Askam (1890) of Type 2 and the two boxes at Carnforth Station Junction, a unique early box of c.1870 in matching style to the station buildings and its successor box of 1903 of Type 4.

Type 1

There are four examples of Type 1 in existence. One, **Bootle** (c.1871) is an attractive and very early low platform mounted box, and although it has had its windows replaced, would be worth retaining. One other box of this type, **Ravenglass** (c.1874) is a very tall box with a timber superstructure on a stone base. It is currently preserved by the Ravenglass & Eskdale narrow gauge railway and is in excellent and original condition.



Figure 25 Bootle. © Charles Weightman



Figure 26 Ravenglass. © John Tilly

Type 2

Besides the listed Type 2 box at Askam, there is also a platform mounted example at **Haverwaite** (1891) on the Lakeside & Haverthwaite heritage railway.



Figure 27 Haverthwaite. © John Tilly

Type 3

The Type 3 design is one of the most distinctive boxes ever erected, in an arts and crafts style, probably influenced by the stations that Austin & Paley were designing for the Furness Railway. It has a tall battered base in stone and a steeply pitched tiled hipped roof. Tall window frames are individually grouped. Unfortunately the survivors have all had their windows replaced but this has altered their character less than other boxes with larger expanses of window and more complicated patterns of glazing. Examples survive at Park South (1883) and **St. Bees** (1891), the latter in an attractive rural setting is worth consideration.



Figure 28 St. Bees. © John Tilly

Type 4

There is a Type 4 box at **Lakeside** (1913) on the Lakeside & Haverthwaite heritage railway that is very similar to the listed 1903 example at Carnforth but better in that it retains its original windows. There is also another interesting variant on the Type 4 theme at **Arnside** (1897) of stone construction with different varieties of stone used to create a polychromatic effect also seen in many of the company's station buildings.



Figure 29 Lakeside. © John Tilly



Figure 30 Arnside. © John Tilly

Lancashire & Yorkshire Railway

The L&YR, a major English company that had a complex network in the two counties it served, is seriously under-represented among those boxes enjoying protection. The only box on the entire L&YR system to be listed is Parbold (1877), a Saxby & Farmer box, with none of the L&YR's own designs listed at all. Many of its boxes were the work of contractors but it evolved its own design, based on that of the Railway Signal Co.

The selection of L&YR designs is made difficult by the fact that, being mainly located in the north west, most of them have been subject to the extensive and somewhat

insensitive modernisation carried out since the mid-1990s in this area. One candidate, however stands out. **Hebden Bridge** (1891), although it has had its windows replaced, has had this done in a reasonably sensitive way, respecting the original pattern of glazing, and the result is an impressive box that even retains its early nameboard. It forms part of an important group with the adjacent listed station buildings which together create a timewarp atmosphere as they, too, retain much of their pre-1914 signage. As a whole, the station is one of the most intact in northern England and the box should be retained in situ.



Figure 31 Hebden Bridge. © Construction Marine Ltd.

Some later boxes on the L&YR had hipped roofs and a particularly handsome all-timber example exists at **Birkdale** (1905). Although it closed in the 1990s, it was retained and forms a group with the nearby unlisted but very attractive and well restored station buildings, and should be considered as the sole survivor of this later type of L&YR box. Other boxes on the L&YR system are dealt with under the respective signalling contractors.

London & North Western Railway

The LNWR, one of the largest railways in England, was responsible for some of the most standardised signal boxes from 1874 onwards. Prior to 1875, boxes were supplied principally by Saxby & Farmer. In view of the company's size, it is under-represented among box listings with only the two large boxes at Shrewsbury and that at Wansford being listed, although there are a number of boxes listed by Cadw in North Wales.

Type 3

The first of the standard designs, the Type 3 built between 1874 and 1876 has four examples remaining, all built in 1875, two, Monks Siding and Narborough, still in use by Network Rail, one, Fossway Crossing, out of use and boarded up and one, Betley Road, where the top has been re-erected at Boughton on the Northampton & Lamport Railway. None are listed. **Monk's Siding** retains its original 1875 frame, one of the oldest still in use on the national rail network, has had its windows replaced, but is otherwise largely intact. Betley Road still has its original fenestration, albeit on a new brick base. The design is significant in that it was the first to be produced of standardised modular components at the LNWR's Crewe Works and was the forerunner of all the boxes that were to follow until the grouping of 1923 and beyond.



Figure 32 Monk's Siding. © Charles Weightman

Type 4

Constructed between 1876 and 1904, this was by far the numerous type of LNWR signal box, consisting of modular components and ranging in size from little more than huts to the massive structures at Shrewsbury.

Many hundreds were built and many survive: 36 on Network Rail and a further 15 on heritage railways, out of use, etc. Only two are listed, the atypical Shrewsbury Crewe Junction and Shrewsbury Severn Bridge Junction (both 1903), the latter the largest mechanical signal box in operation in Europe today. At least one example of a

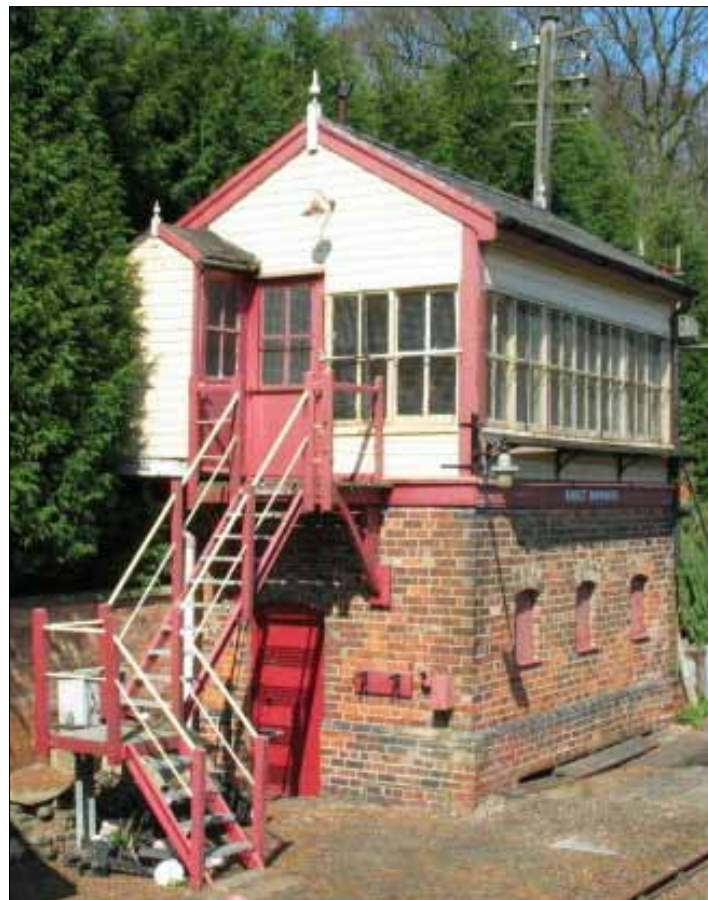


Figure 33 Market Bosworth. © John Tilly

conventional Type 4 box should be assessed. That at **Market Bosworth** (1898) on the Battlefield Line is one of the best examples of a type 4 on a brick base, still in situ in its original location, while the box formerly at **Yorton** (1882), now moved to Arley on the Severn Valley Railway, is a well-preserved all-timber box. **Helsby Junction** (1900) is a slightly larger, platform-mounted, box in good condition and adjacent to listed station buildings with which it also has group value.

Type 5

This was a development of the Type 4, built from 1904 onwards. It was rather more handsome with a much greater roof overhang on all sides. One example, Wansford (1907) is listed.



Figure 34 (Left) Yorton (now at Arley, Severn Valley Railway).

© John Tilly

Figure 35 (Below) Helsby Junction.

© Charles Weightman



Midland Railway

Midland Railway signal boxes were more standardised than those of any railway companies, other than those of the LNWR. Having established its basic design about 1870, it continued to build it for the remainder of its independent existence, and indeed beyond, as the LMS perpetuated it until 1930. Within the basic design, there are variations based on window sizes and arrangement of glazing bars. Numerous examples survive, partly because the boxes were built in large numbers and also, being constructed in prefabricated panels entirely of timber, it has proved easy to move MR boxes to other sites.

Although only two still operational Network Rail MR boxes, Oakham Level Crossing (1899) and Swinderby (1901), are listed, there are numerous examples of these boxes on heritage railways, some of which are listed. In addition, the listed St Albans South, a much larger than average MR design (1892) is still in situ and leased by Network Rail to a group who have restored the box and opened it as a signalling museum.

Among the heritage railway boxes, the former Ais Gill and Kilby Bridge boxes (both 1900), at the Midland Railway Centre are listed. Other listed MR boxes are Keighley Station Junction (1884) (leased by Network Rail to the Keighley & Worth Valley Railway), Selside (1907), at Steamtown, Carnforth, Embsay Station (1923) and Warmley (1918).

The MR signal box is therefore well represented by listed examples. The only gap would appear to be the earliest type of box (SRS Type 1) built 1870-84 which is distinguished by having shallow windows at both front and sides. Three survive in the form of top portions moved to new locations on heritage railways, although all three are on new bases. The Type 2a design (which has deeper windows at the front than its predecessor) is represented by only two listed boxes (Keighley Station Junction and Ais Gill) and the well restored box at **Settle** (1891), which has been moved back from its original position and complements the nearby listed station buildings, might be considered. The signal boxes on the Settle & Carlisle railway form an integral part of the visual appeal and significance of this, one of the greatest works of Victorian railway construction, and some way in which they may be retained should be explored. **Garsdale** (1910) might also be worth assessing. It is in excellent repair, although the windows have been replaced, and forms part of the station setting. Garsdale (originally Hawes Junction) was the scene of one of the worst railway crashes in Britain and the box played a significant role in this.



Figure 36 Garsdale.
© John Tilly

North London Railway

Three boxes built by this company, which was absorbed by the LNWR in 1909, survive. All have been altered with new glazing; Acton Wells Junction (c.1892) is probably the best example but all have seen significant alterations in recent years.

C) London & North Eastern Railway constituent companies

Great Eastern Railway

Relatively large numbers of GER boxes have survived into recent years with many sited on rural lines that have had low priority in resignalling schemes. In addition, there have been less extensive programmes of refurbishment carried out than in some other parts of the country with more boxes retaining their traditional appearance.

Type 1

The earliest type of GER box, the Type 1 with a hipped roof, built from the 1860s until 1876, is represented by two surviving examples. Roydon (1876) (currently boarded up) adjoins the listed 1841 station buildings but has been extensively modified to the extent that there is little of the original structure left. The top of Wrabness box (1875) has been moved to the Colne Valley Railway heritage line and is in highly original condition.

Type 2

Examples of Type 2 (1877-82) are more numerous with 11 operational and 8 in other uses. None are listed. **Downham Market** (1881), an all-timber box, has group value with the adjacent listed station buildings which have won a railway heritage award and the station itself forms a group with the prominent (unlisted) flour mill, a cluster of industrial buildings once a common sight in most East Anglian small towns. **Spooner Row** is a well preserved example on a brick base (1881) while Wymondham (1877), an all-timber example, is the earliest survivor of the type and also the oldest GER box in operational use.



Figure 37 Downham Market. © John Minnis



Figure 38 Spooner Row. © Wikimedia

Type 3

Type 3 is one of the most distinctive GER designs with the use of margin light glazing bars and cladding of timber blocks cut to resemble rustication. Five exist with Network Rail. **Brundall** (1883) is a handsome all timber box with elaborate bargeboards, the best remaining example on the national network. Two are preserved, with Mistley (1882), a smaller version of the design, moved to the East Anglian Railway Museum.



Figure 39 Brundall. © John Tilly

Type 4

Six of these all brick boxes built between 1883 and 1885 survive on the Ely-Norwich line, together with a further example at Yarmouth Vauxhall. That at Attleborough has recently been listed, along with the station buildings. **Thetford** should be considered for its contribution to one of the finest surviving station complexes in East Anglia with the station buildings already listed.



Figure 40 Thetford. © John Tilly

Type 5

The sole survivor of this arts and crafts influenced design with its distinctive fenestration and eaves valencing, March East Junction, has recently been listed while the non-standard box at the royal station of Wolferton, based on the Type 5 design, is also listed.

Type 6

There is one survivor of this design, Lowestoft (1885), but it is insufficiently different from other GER designs to be considered.

Type 7

Type 7, a simple all-timber design, was built in large numbers from 1885 until the 1920s and was the most common GER design. 13 survive as operational boxes with Network Rail and an unusually large number survive in preservation, due to the ease with which the all-timber boxes may be moved. Three are listed, Chappel & Wakes Colne (1891) at the East Anglian Railway Museum, Wroxham (1900), moved further back from the track at its original location and Hertford East (1888), boarded up and in a poor state of repair since closure. In view of this, there is little need for further listed examples, although there might be stronger claimants for listed status than Hertford East such as **Bury St. Edmunds** (1888), the winner of a restoration award for May Gurney, the contractors.



Figure 41 Bury St Edmunds. © John Tilly

Type 8

Two survivors but, again, there are insufficient differences to distinguish them from other GER boxes.

Great Northern Railway

The Type 1 box of the Great Northern Railway is well represented both in terms of the number of survivors and those listed. 23 are still operational with a further 14 in other uses. The high proportion of listed examples has much to do with the attractive appearance of the design and the fact that few of the boxes built to it were identical, owing to the GNR practice of having some boxes built by the company's own labour force while others were put up by local builders. Six of the operational boxes, Beckingham (1877), Eastfield (c.1893), Heckington (1876), Sleaford East (1882), Stow Park (1877) and West Street Junction, Boston (1874) are listed together with a further pair closed under the Lincoln resignalling in 2008, East Holmes and High Street. The large box at **Skegness** (1882) is a striking all-timber example that shows clearly how it was extended by an extra bay in 1900.



Figure 44 Blankney. © John Tilly

No GNR boxes other than Type 1s are listed and only four later boxes survive with Network Rail. To represent these later boxes, that at **Wainfleet** (1899) and the Type 4 design at **Blankney**, built in 1928 by the London & North Eastern Railway which continued to build pre-grouping designs for some years post-1923, are proposed.

Manchester, Sheffield & Lincolnshire Railway/Great Central Railway

An example of the earliest and very distinctive MS&LR box, the Type 1, has survived, the box from Worksop West (1874), moved to a location in Wiltshire. If this box can be located, it is a candidate for consideration. The Type 2 box that followed it differed from it in having a gabled rather than a hipped roof – Worksop East (c.1880) of this design is listed while Roxton Sidings (1883) also survives with windows replaced but otherwise in highly original condition. In addition, three Railway Signal Co boxes on the MS&LR, Appleby, Elsham and Kirton Lime Sidings are listed.

The once numerous Type 4 boxes associated with the Great Central London extension are reduced to two, Loughborough North (1896), on the GCR heritage railway, (listed) and the former Culworth Junction (c.1897), now also on the GCR, albeit in parts awaiting re-erection.

The later Type 5 boxes are represented by two listed examples Brocklesby Junction (1914) and Wrawby Junction (1916), together with others at heritage railways.



Figure 42 Skegness. © Charles Weightman



Figure 43 Wainfleet. © Charles Weightman

North Eastern Railway

North Eastern Railway practice is complicated by the fact that, for engineering and signalling purposes, the company was divided into three divisions, the Southern, Central (equating to the Stockton & Darlington Railway) and the Northern. Each division developed its own distinctive designs of signal box.

Southern Division

Type S1a

Between 1873 and 1903, the Southern Division produced highly characteristic all-brick designs, generally small in size, with relatively small windows, usually gabled (and occasionally with the gable facing the track), that had brick buttresses on the corners of the box, often commencing around the operating floor level.

13 are still operational with a further eight in other uses. Five are listed: Bedale (1875), Kirkham Abbey (c.1873), Weaverthorpe (c.1873), Howden (c.1873) and New Bridge (1876). The design is therefore well covered by existing listed structures although there are several other good examples of this distinctive design remaining in original condition such as Rigton (c.1873).

Type S1b

These differ from Type S1a in being smaller boxes, lacking the buttressing or cogged brickwork in the gables. Four survive as operational boxes and a further six in other uses. One, Burton Agnes (1875) is listed.

Two examples on heritage railways, **Goathland** and **Levisham** (both 1876), on the North York Moors Railway may be considered. Aysgarth (1875) on the Wensleydale Railway, a small stone-built platform box, is also a good surviving example.



Figure 45 Goathland. © John Tilly

Types S2-4

In 1903, the somewhat antiquated Type 1 boxes were replaced by much more conventional designs with large windows. There is little difference in appearance between these types and they may be taken together. Type 3 is extinct and 15 of the other two are in operational use with three more in other uses. Beverley Station (1911) and the large box at Falsgrave [Scarborough] (1908) are listed.

Type S5

These are small timber boxes, usually platform mounted at wayside stations. That at **Marston Moor** (1910) is a good example of these very small structures.



Figure 46 Marston Moor. © John Tilly

Central Division

Type C1

These are very early brick-built boxes that have their origins in the Stockton & Darlington Railway. Three survive; one Heighington, (c.1872) located adjacent to a Stockton & Darlington Railway station of c.1827, is listed.

Type C2

These are hipped roof boxes with diagonal boarding above the operating room windows. There are four operational survivors with two more in other uses: one, Shildon (1887), is listed. A later development classified C2b introduced a half-hipped roof with the gablet containing a ventilator; a design element that turned it into one of the most attractive of NER boxes. One example at **Nunthorpe** (1903) survives.



Figure 47 Nunthorpe. © Charles Weightman

Northern Division

Type N1

The earliest pattern of Northern Division box was a small, hipped roof structure. Seven are in operational use: one of these, Chathill (c.1873), is listed. In addition, the long closed box at Norham (nk), a Type 2 box, is listed as part of the station complex.

Type 5

The two remaining examples of these impressive bridge type boxes, Hexham (1901) and Wylam (1897) are both listed.

Non standard designs

The NER had a great many boxes of non standard design. Nine boxes falling into this category are all still operational, three of them linked to bridges. One, Knaresborough (c.1873) is listed. A further 11 survive in various states. Of these the box at Haltwhistle,

striking for the way in which its upper part is cantilevered on both front and rear elevations above a narrow brick base, (1901) is listed, as is the former York Platform box (1907), listed as part of the station buildings and now used as a café. Among the operational boxes are the two oldest working signal boxes on the railway network, Norton East and Norton South, both of 1870 and both having gables facing the track. **Norton South** is a tall box, with a gable end facing the railway. Like almost all the early boxes, it is of plain appearance, but should be considered for its 141 years of operation. The NER also had a very distinctive design of covering for ground frames resembling a cupboard with a rounded top. An example at Hammerton is a replica of 1972 built around a 1914 ground frame but would be worth retaining as an example of the smallest building to be distinguished with the name of signal box.



Figure 48 Norton South. © Charles Weightman

D) Great Western Railway

Considering its size, the GWR is poorly represented in terms of listed boxes. Seven are listed. Very few boxes built prior to the advent of the widely constructed Type 7 design in 1896 remain operational and relatively few still exist in other uses. Two of the seven are early Bristol & Exeter Railway boxes, both listed, at Weston-super-Mare (c.1866, the oldest surviving signal box) and Williton (c.1875). There is also a sole survivor of the Saxby & Farmer boxes employed in the interlocking of the Bristol & Exeter and South Devon Railways at Stoke Canon (1874). Torquay South is a non standard early GWR box of c.1876 that is listed and has group value with the listed station buildings. All four boxes are precious relics of the broad gauge whose tracks they once controlled. In addition to the GWR designs, there are a number of McKenzie & Holland boxes on the northern part of the former GWR system mentioned in the section dealing with contractors' designs.

Type 2

These are an early standard design with hipped roofs. Three survive. St Mary's Crossing (date not known but 1870s), a very small box and still operational, is listed, the former Frome Mineral Junction (1875) is at the Didcot Railway Centre, mounted on a new brick base, and **Par** (c.1879) is also operational. Par is a large platform-mounted box that was extended in matching style in 1893. It has had replacement windows but these are relatively sympathetic. The rarity of these early boxes and the platform location of Par with re-use possibilities renders it worthy of consideration.



Figure 49 Par. © John Tilly

Type 3

Of this once common design, a gabled development of its hipped roof predecessor, just two examples remain in England, neither operational, Bodmin Road (1887) and Cove Siding (1884), a small box on private land. There is however one Welsh survivor at Ferryside. **Bodmin Road** (1887) remains in situ on the platform at Bodmin Road station and is now a café. It had a window inserted in one gable end at some point but is otherwise externally in original condition although it has lost its frame.



Figure 50 Bodmin Road. © John Tilly

Type 4

The three remaining operational boxes of this design from the 1880s have all been altered in varying degrees but that at **Rowley Regis** (1887) was removed to Hayes Knoll on the Swindon & Cricklade Railway and is in fine original condition externally although its frame is non-original.

Type 5

Two boxes in well preserved condition at **Lostwithiel** (1893) and St Erth (1899) have had their windows replaced but the work has been carried out quite sympathetically. There are only three examples remaining of this gable-ended standard design, built in large numbers throughout the GWR prior to the introduction of the Type 7 in 1896.



Figure 51 Lostwithiel. © John Tilly

Type 7

This was the most common GWR design, built from 1896 until 1927, with further variants constructed until the outbreak of World War Two. There are many small variations in details such as locking room windows and the use of blue engineering brick. Perhaps more noticeable is the existence of several all-timber versions of the design. Only two examples of Type 7 are currently listed, the exceptionally large box at Princes Risborough North (1905) and the elevated box at Dawlish (1918) that is structurally in poor condition.

Although numerous examples survive as operational boxes with Network Rail, many have been altered in recent years. However, there are also many examples of the design which have remained in situ (as opposed to having been moved from other locations)

in good original condition on heritage railways, of which one or more ought to be considered for designation. Examples of brick-built boxes include **Blue Anchor** (1904) and **Bishops Lydeard** (1906) on the West Somerset Railway, Cranmore (1904) on the East Somerset Railway, Toddington (1905) on the Gloucester Warwickshire Railway and Buckfastleigh (1907) on the South Devon Railway. Well-preserved examples of all timber boxes include those Dunster (1934), now moved to Minehead, and a large version formerly at Exeter West (1913) at Crewe Heritage Centre while a timber superstructure formerly at Radstock North (1909) has been re-erected on a brick base is at the Didcot Railway centre.



Figure 52 Blue Anchor. © John Tilly

Other Type 7 boxes still on the rail network but no longer operational include **Torre** (1921), an exceptionally tall structure, located adjacent to listed station buildings. **Totnes** (1923), now reused as a café, is lengthy and has two projecting bay windows and splayed corners to the operating floor to give better visibility down the platform.



Figure 53 Torre. © John Tilly



Figure 54 Totnes. © John Tilly

E) Joint Lines

Cheshire Lines Committee

2 boxes, Mobberley (1886) and Plumley West (1908), are still in operational use but both have been extensively altered.

Somerset & Dorset Joint Railway

This was perhaps the most famous cross-country railway line in England, inspiring an extraordinary number of books on its history, and it is now regarded by many as the classic example of an English country railway. Only one of its distinctive signal boxes survives, that at **Wellow** (1892), formerly the studio of Sir Peter Blake, but now used for accommodation. As the sole survivor, it merits consideration.

LNWR/GWR Joint

The LNWR/GWR line across the Welsh marches was interlocked in the early 1870s and five of the squat hipped roof boxes, which are notable for being deeper than they are wide, survive. None are listed. **Marsh Brook** (1872) is the best surviving example of what is one of the largest groups of very early signal boxes to remain in operational use.



Figure 55 Marsh Brook. © John Tilly

Midland & Great Northern Railway

One M&GNR box, that at Cromer (c.1920), is listed, partly on account of its concrete block construction, a material of which the M&GNR made extensive use. Earlier M&GNR boxes were based on the designs established by the two partners in the company, the MR and the GNR, and a number survive in private hands.

London Underground signal boxes

Two signal boxes on the London Underground network are listed, Chesham (1889) and Ruislip (1904), both Metropolitan Railway designs. A further box of similar type survives at Chorleywood but the really significant survival on the LU system is the long closed box at **Liverpool Street** (1875). This box is the only remaining historic signal box on the central London underground lines and dates back to the days of steam haulage on the Circle line. As such, it is a unique link to the early years of operation of the first underground railway in the world.



Figure 56 Liverpool Street. © John Tilly

F) Post-grouping designs

Southern Railway

The Southern Railway initially carried on building boxes that were a development of LSWR and SE&CR designs before developing a gabled box design of its own. A large, non-standard box on a bridge was built at Canterbury West in 1928 and is listed. In 1937, the streamlined moderne box made its appearance. These boxes emphasised the go-ahead approach of the Southern Railway, and were associated with its main line electrification schemes, the first in the country. Two, Woking (1937) and Horsham (1938), are now listed. Other good examples exist at Arundel, Bognor Regis and Dorking (all built in 1938).

London Midland & Scottish Railway

The LMS continued to build boxes to MR and LNWR design until 1929 when it combined the timber panels and fenestration of the MR design with the gabled roof and brick base of the LNWR box for its standard Type 11 box that continued to be built until 1954. 24 still survive: a good example is that at **Ramsbottom** (1938) on the East Lancashire Railway.



Figure 57 Ramsbottom. © John Tilly

London & North Eastern Railway

The LNER carried over pre-grouping designs but devised its own styles from the mid-1920s. Most of the boxes concerned are brick-built and obvious developments of pre-grouping types. Really distinctive designs did not emerge until the 1930s, with the Type 12 used in the north eastern area. Most of these have gone but one closed box at **Otterington** (1933) remains. Otterington and other stations on the main line north of York were rebuilt when the line was widened to four tracks. The interest of this box lies in the way it was designed to match the adjacent neo-Georgian station buildings, built of the same brick and with a roof of similar pitch, something very rare in British signal box design. Hull Paragon (1938) (LNER Type 13) is the LNER equivalent of the Southern Railway's moderne boxes but square cornered throughout with none of the rounded corners that distinguish the SR type. Raised brick bands emphasise the horizontal lines of the box.

Great Western Railway

Apart from power boxes (all of which have now been demolished) that formed an integral part of the major resignalling schemes at Paddington and Bristol in the 1930s, GWR boxes followed broadly the Type 7 designs until the Second World War.

Air Raid Precautions Boxes

With the deteriorating international situation in the 1930s, all four companies began to build all-brick boxes with thick reinforced concrete roofs capable of withstanding major blast damage. Such boxes cannot be called attractive in any sense of the word but they do represent the railways' response to the impact of war and bear witness to their vital



Figure 58 Runcorn. © Charles Weightman

role in war transport. If one is to be selected, **Runcorn** (1940) or Watery Lane (1942), both LMS boxes and still operational, are the better examples and there is an SR one at Gomshall & Shere (1941), now used for permanent way purposes.

G) Post-war Signal Boxes

One power box, Birmingham New Street (1966), has been listed. However few post-war boxes are of such outstanding quality. Stringent tests are applied to post-war buildings assessed for listing. One building of some historical interest is the box at Uttoxeter, opened in 1981, which was the last mechanically operated signal box to be built in Britain. It is of a standard design, the LMR type 15, built in large numbers from the 1950s and, while it may not be considered of sufficient architectural or historical interest for listing, it nevertheless is worth flagging up.



Figure 59 Uttoxeter © John Tilly

Among 1960s power boxes, that at Hackney Downs (1960) with its deep overhanging fascia forming a sun baffle and the two power boxes at Bescot and Bletchley (both 1965), both quite powerful brutalist structures, are representative of the era. Some of these large power boxes may lend themselves to conversion for alternative railway use, ensuring that examples of the period remain as evidence of this later phase of signalling technology.



Figure 60 Bescot. © John Tilly

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Appendix I

Signal Boxes currently listed

Name	List Entry No
Ais Gill (moved to Butterley)	1335401
Appleby (Lincs)	1161513
Askam	1197891
Attleborough	1401582
Baschurch	1386582
Beckingham	1045091
Bedale	1252652
Beverley	1084065
Billingshurst	1271531
Birmingham New Street	1117383
Bollo Lane Junction	1323687
Brading	1034364
Brocklesby Junction	1249630
Burton Agnes	1083820
Canterbury West	1258154
Carnforth Station Junction	1078212
Carnforth Station Junction (original)	1071920
Chappell & Wakes Colne	1224484
Chathill	276364

Chesham	I401704
Crawley	I298887
Crediton	I292537
Cromer	I380342
Dawlish	I391070
Eastfield	I119749
East Holmes	I391954
Elsham	I346846
Embsay Station	I301523
Falsgrave	I243660
Hale	I356499
Haltwhistle	I156315
Havant	I271846
Heckington	I061808
Heighington	I391940
Hertford East	I268761
Hexham	I042523
High Street [Lincoln]	I392292
Holmwood	I376781
Horsham	I390051
Horsted Keynes South	I257907
Howden	I233349
Instow	I107599
Isfield	I392068

Keighley Station Junction	I134I5I
Kilby Bridge (moved to Butterley)	I329374
Kirkham Abbey	I3I5766
Kirton Lime Sidings	I260906
Knaresborough	I248970
Leek Brook Junction	I392398
Loughborough North	I39I3I5
Louth North	I389I37
March East Junction	I408I97
New Bridge	I24I47I
Norham	I155048
Oakham Level Crossing	I252769
Oswestry South	I176559
Parbold	I36I805
Plumpton	I238580
Princes Risborough North	I276408
Ruislip	I380983
Selside (moved to Carnforth)	I0782I4
Sleaford East	I26I326
Sildon	I390827
Shrewsbury Crewe Junction	I247I6I
Shrewsbury Severn Bridge Junction	I27I480
St Albans South	I103005
St Mary's Crossing	I340480

Stoke Canon	I262013
Stow Park	I146606
Sudbury	I038322
Swinderby	I165196
Topsham	I224484
Torquay	I218283
Wansford	I274859
Warmley	I231481
Weaverthorpe	I308300
Weston-super-Mare	I129748
West Street Junction	I388986
Williton	I174890
Woking	I236967
Wolferton	I077592
Worksop East	I277083
Wrawby Junction	I249229
Wroxham	I356772
Wylam	I155046
York Station	Listed with station buildings
Swing Bridge boxes	
Boston	I388922
Goole Swing Bridge	I346710
Sutton Bridge	I064536

Demolished and moved boxes

Burton Agnes (1903 box)	346456	Demolished
Ecclesfield	240614	Demolished
Feock	329007	Not a signal box
'Gorse Hill Bridges Signal Box '	1023159	non-extant
Kettering	1051649	Moved to MR Centre
Nafferton	1346310	Demolished

Appendix 2

Signal Boxes selected for assessment for Listing

Key:

NR – Network Rail box

HR – Heritage railway box

GV – Network Rail box that, while significant in itself, also forms part of a group with other significant listed or unlisted railway buildings

Arley (formerly at Yorton), Worcestershire, HR

Arnside, Cumbria, NR

Aylesford, Kent NR, GV

Berwick, East Sussex NR, GV

Bewdley North, Worcestershire, HR

Bewdley South, Worcestershire, HR

Birkdale, Merseyside, NR, GV

Bishops Lydeard, Somerset, HR

Blankney, Lincs, NR

Blue Anchor, Somerset, HR

Bodmin Road, Cornwall, NR

Bootle, Cumbria, NR

Bournemouth West Junction, Dorset, NR

Brundall, Norfolk, NR

Bury St Edmunds, Suffolk, NR

Canterbury East, Kent, NR

Chichester, West Sussex, NR

Cuxton, Kent, NR, GV

Daisyfield Station, Lancashire, NR
Downham Market, Norfolk, NR, GV
Eastbourne, East Sussex, NR, GV
Garsdale, Cumbria, NR, GV
Goathland, North Yorkshire, HR
Grain Crossing, Kent, NR
Haslemere, Hampshire, NR
Haverthwaite, Cumbria HR
Hayes Knoll (formerly at Rowley Regis), Wiltshire, HR
Hebden Bridge, West Yorkshire NR, GV
Helsby Junction, Cheshire, NR, GV
Hensall, North Yorkshire, NR, GV
Highley, Shropshire, HR
Horrocksford Junction, Lancashire, NR
Lakeside, Cumbria, HR
Levisham, North Yorkshire, HR
Littlehampton, West Sussex, NR
Liverpool Street, London EC3, LUL
Lostwithiel, Cornwall, NR
Maidstone West, Kent, NR, GV
Market Bosworth, Leicestershire, HR
Marsh Brook, Shropshire, NR
Marston Moor, North Yorkshire, NR
Monk's Siding, Lancashire, NR

Norton South, Co Durham, NR
Nunthorpe, North Yorkshire, NR
Otterington, North Yorkshire
Par, Cornwall, NR, GV
Petersfield, Hampshire, NR, GV
Pulborough, West Sussex, NR, GV
Ramsbottom, Lancs, HR
Ravenglass, Cumbria, HR
Runcorn, Cheshire, NR
Rye, East Sussex, NR, GV
Settle, North Yorkshire, NR/museum, GV
Shepherdswell, Kent, NR
Skegness, Lincs, NR
Snodland, Kent, NR, GV
Spooner Row, Norfolk, NR
St Bees, Cumbria, NR
Thetford, Norfolk, NR, GV
Torre, Devon, NR, GV
Totnes, Devon, NR
Tutbury Crossing, Staffordshire NR
Uckfield, East Sussex, museum
Wainfleet, Lincs, NR
Wateringbury, Kent, NR, GV
Wellow, Somerset

Woolston, Hampshire, NR, GV

Wye, Kent, NR, GV



ENGLISH HERITAGE RESEARCH AND THE HISTORIC ENVIRONMENT

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The Heritage Protection Department provides English Heritage with this capacity in the fields of building history, archaeology, archaeological science, imaging and visualisation, landscape history, and remote sensing. It brings together four teams with complementary investigative, analytical and technical skills to provide integrated applied research expertise across the range of the historic environment. These are:

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- * Assessment (including Archaeological and Architectural Investigation, the Blue Plaques Team and the Survey of London)
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