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"Ordnance Survey on the rails"

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The Charles Close Society was founded in 1980 to bring together all those with an interest in the maps and history of the Ordnance Survey of Great Britain and its counterparts in the island of Ireland. The Society takes its name from Colonel Sir Charles Arden-Close, OS Director General from 1911 to 1922, and initiator of many of the maps now sought after by collectors.

The Society publishes a wide range of books and booklets on historic OS map series and its journal, *Sheetlines*, is recognised internationally for its specialist articles on Ordnance Survey-related topics.

Ordnance Survey on the rails

Richard Dean

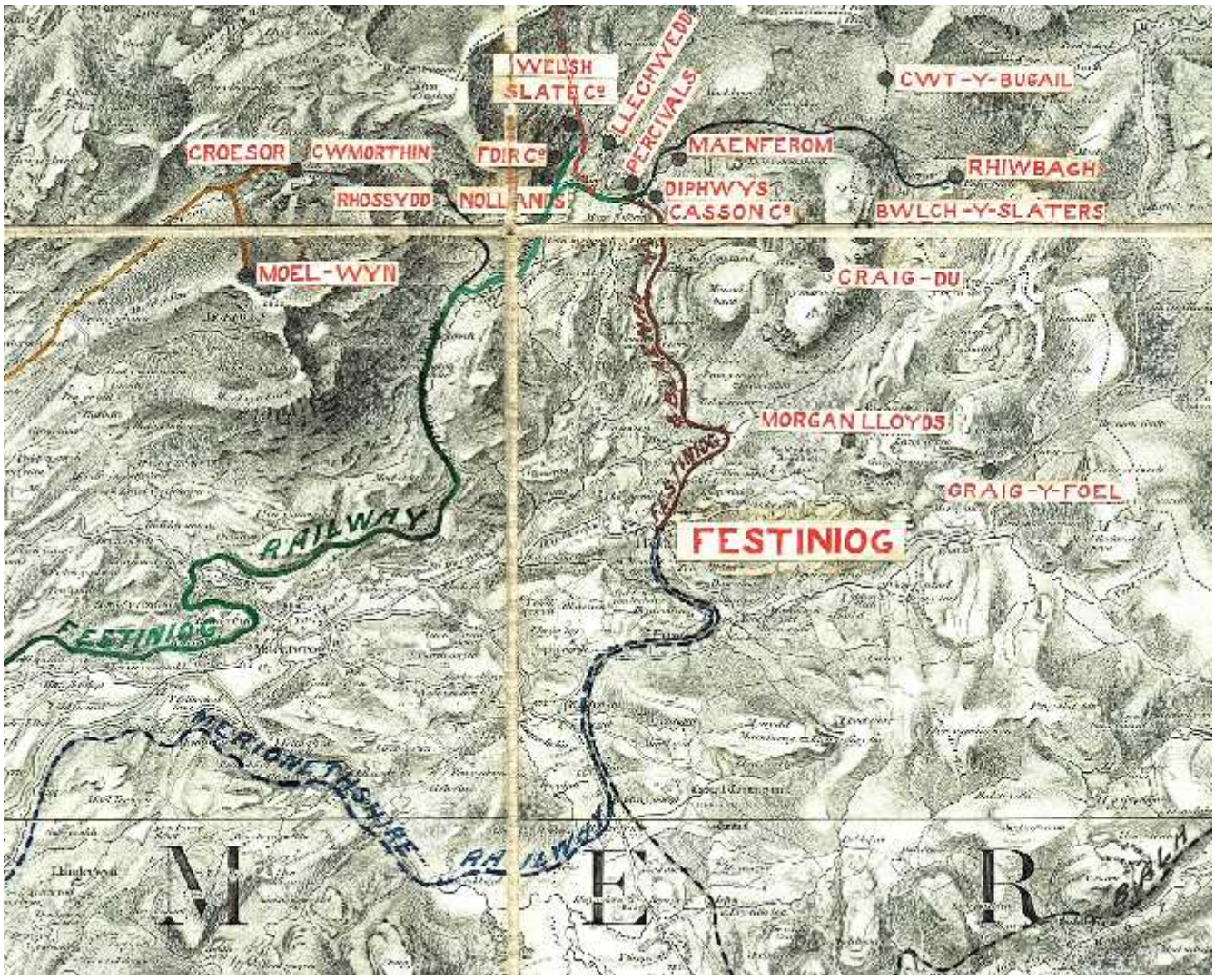

Figure 1. Part of an Old Series one-inch map c1874 covering the proposed Bala & Festiniog Railway, marking the positions of the principal slate quarries

From the numerous surviving examples it is clear that railway companies were good customers for Ordnance Survey sheets. Gavin Johns[1] has drawn attention to the use of OS plans in the preparation of detailed railway line plans, which touches on the bigger topic of how OS data has been used over the years and the benefits that it has brought. This is a field which seems to have been little researched, but it is worth considering the railway connection in a little more detail.

Small scale OS maps were extensively used by railway companies for a multitude of commercial and legal purposes, one-inch engraved sheets often being inked up by hand with routes, stations and so on.

By a parliamentary standing order of 1846 an index map showing the location

[1] *Sheetlines* 105, 44-53.

and route of proposed railways had to be deposited with the detailed plans and sections. The one-inch OS map was used where available, and a typical example is shown in figure 2.

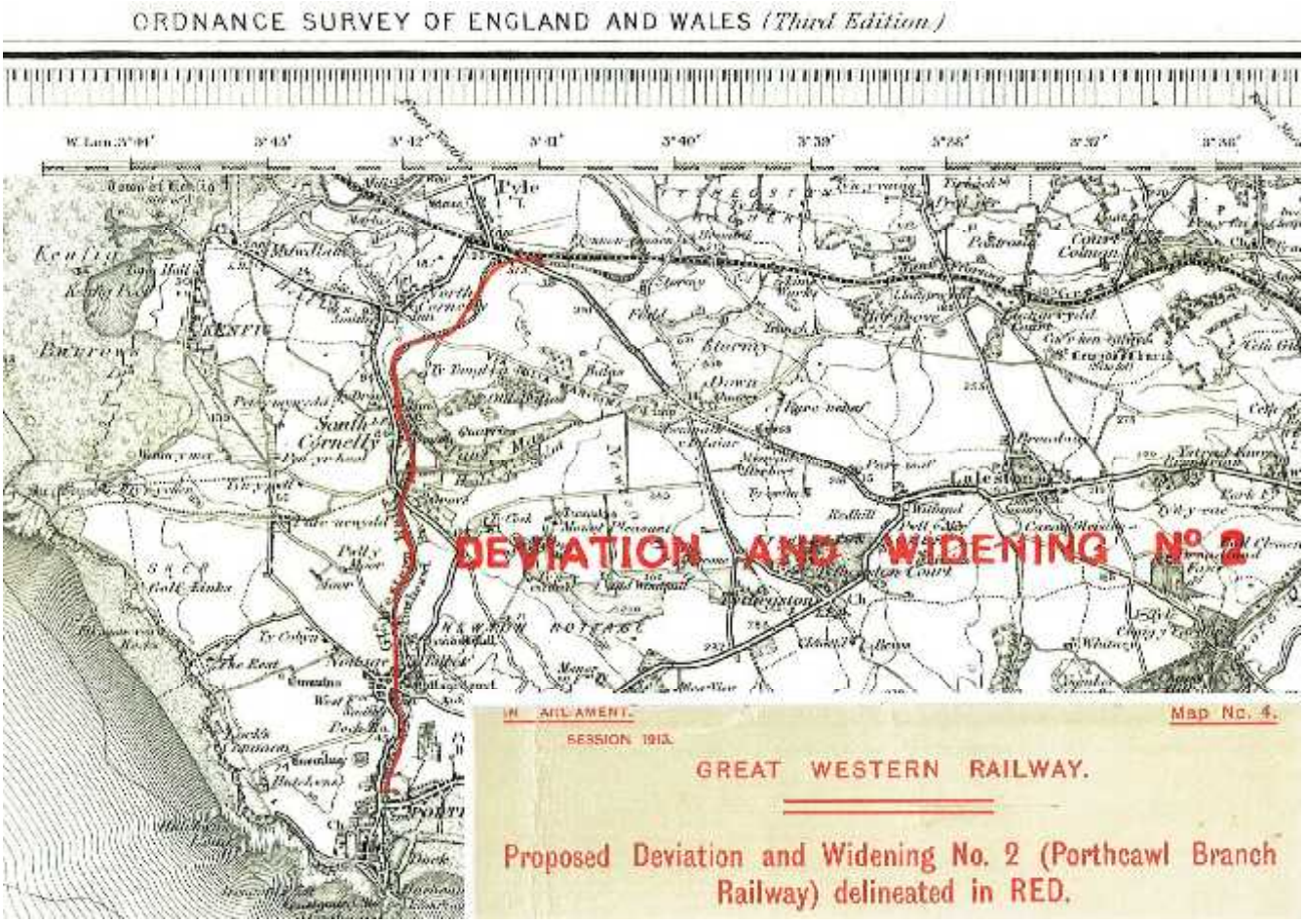

Figure 2. Part of one-inch engraved sheet 262 used as an index map by the GWR

Railway companies were jealous guardians of their territories, and kept a watchful eye on schemes promoted by neighbouring lines and undertakings. Parliamentary deposits were carefully scanned each session, and typically proposed routes would be transferred to sets of OS sheets for careful assessment as to whether petitions should be lodged opposing the scheme outright, or seeking protective provisions in the promoter's Bill (see figure 3).

Designing a route for new railways needed an accurate field plan which was usually produced from an expensive ad hoc survey.[2] Surprisingly, the potential benefit of large-scale OS mapping for this purpose does not seem to have played a large part during the 'Battle of the Scales' 1851-1859, perhaps because it was a quiet period for railway promoters, but as Richard Oliver has commented, 'They used it when it was available'[3] (see figure 4).

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[2] Gordon Biddle, *The Railway Surveyors,* Ian Allan Ltd & BR Property Board, 1990, chapter 3.

[3] Richard Oliver, *The Ordnance Survey in the nineteenth century,* Charles Close Society, 2014, 485.

Any infrastructure works by, or affecting, the line needed plans, and OS sheets were bought and used in large numbers, particularly where property outside of the railway boundary was involved (see figure 5).

Figure 3. Central London extract from six-inch OS mapping of 1895 used by the London & North Western Railway to record proposed schemes. The sheets were joined and cloth backed in three large sections covering the whole of the London area

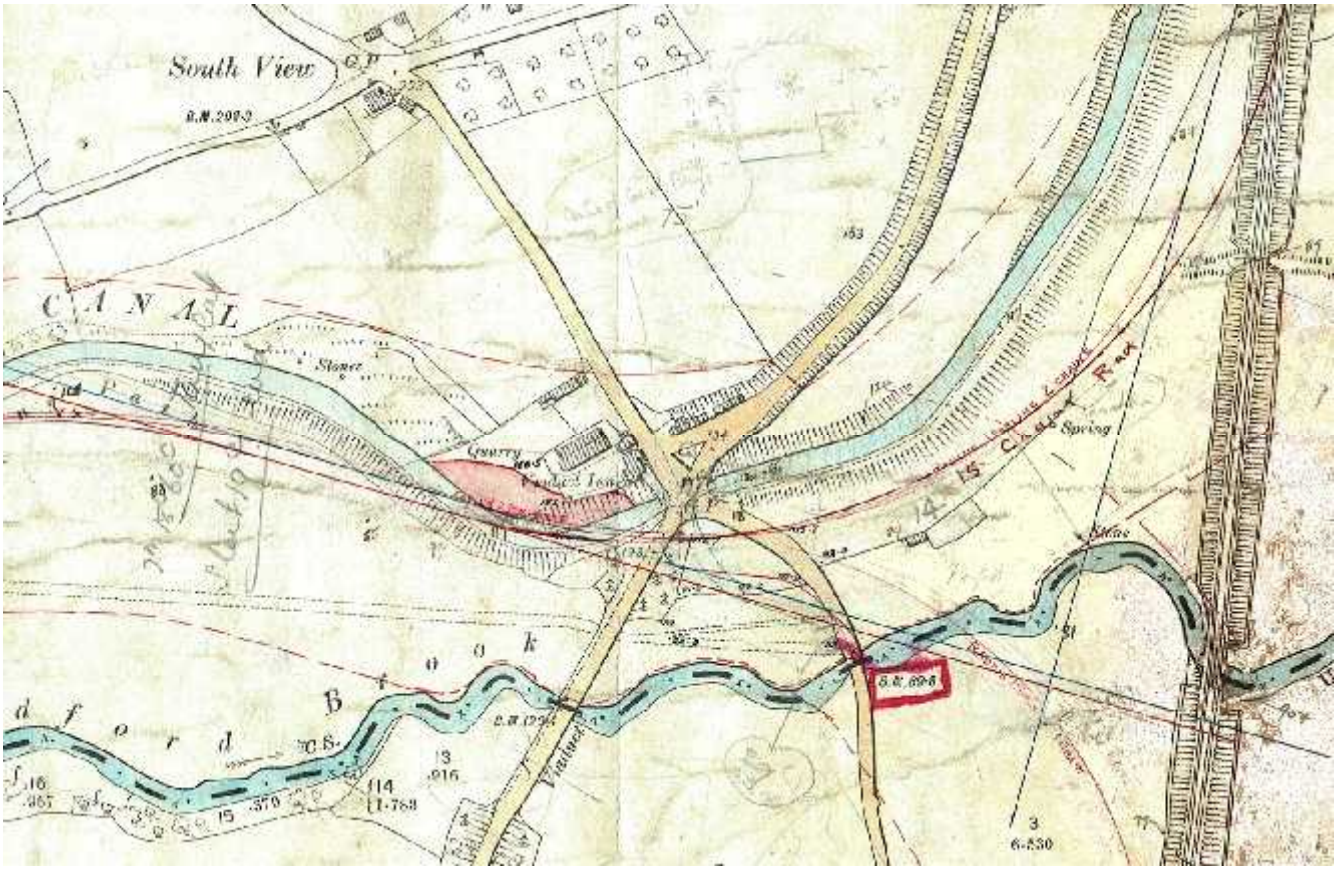


Figure 4. Part of Somerset OS survey of 1883 used by GWR engineers to design a line from Camerton to Limpley Stoke c1903

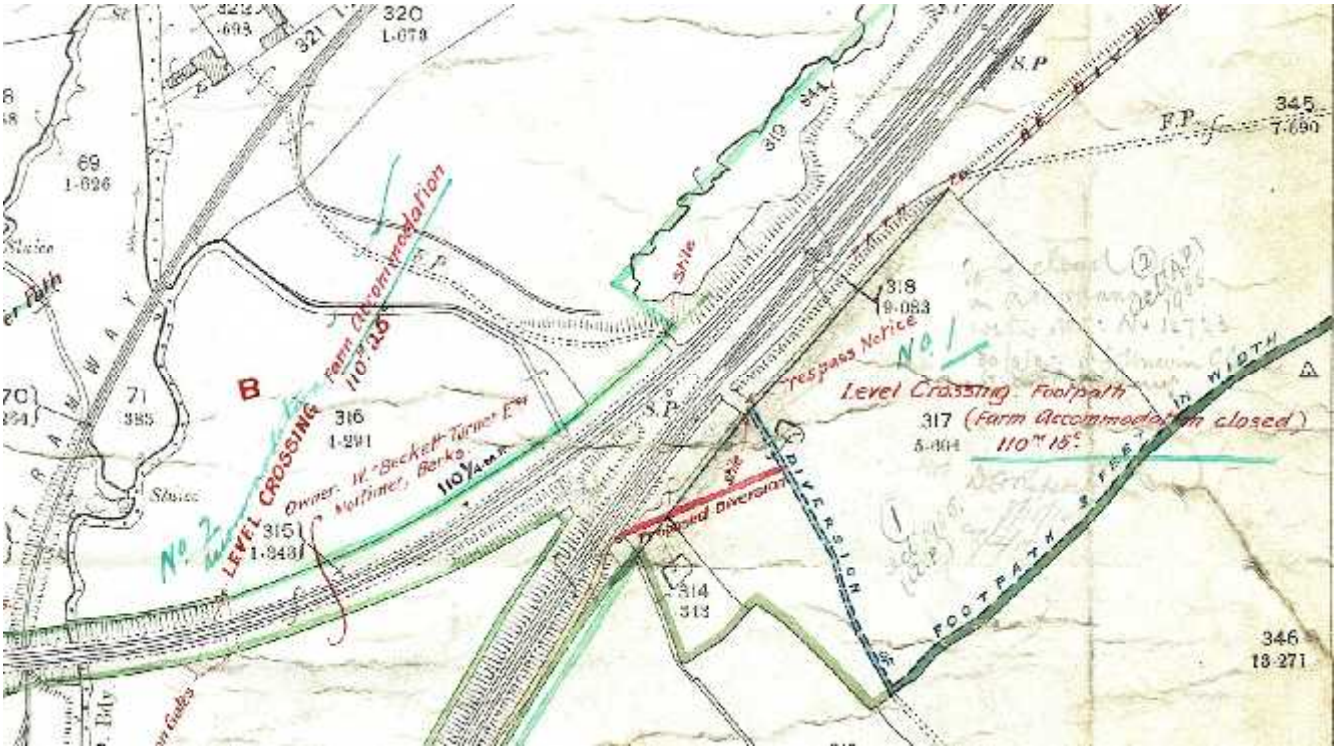


Figure 5. OS plan used to show alterations to footpath routes affecting the GWR at Westbury, Wiltshire

The land plans referred to by Gavin Johns prepared by the GWR and other companies were usually constructed from bespoke surveys, although sometimes an earlier plan would be recycled.[4] Most of the larger companies distributed printed and bound copies to many of their departments such as those of the Secretary, Engineer, General Manager, and Solicitor. Here they became valuable administrative tools with a purpose beyond land management, and were frequently called 'line plans'.

Many such plans were surveyed, drawn and printed by outside contractors and it is difficult to establish the extent to which they incorporated OS data. When the writer worked in the BR Liverpool District Estate Office in the 1960s there was a perception that the railway's own surveys were more accurate than OS sheets, particularly in respect of permanent way. An experienced chainman explained to me that the width of railways between the lineside fences on OS plans was unreliable as they were commonly used to absorb any plotting errors; this may have been an exaggeration, and OS plans gradually came into more frequent use. The Lancashire & Yorkshire Railway decided to standardise their motley collection of existing land plans around 1900 with the data transferred to cloth-backed 1:2500 sheets which gave good service in the country but were less successful in busy urban areas (see figure 6).

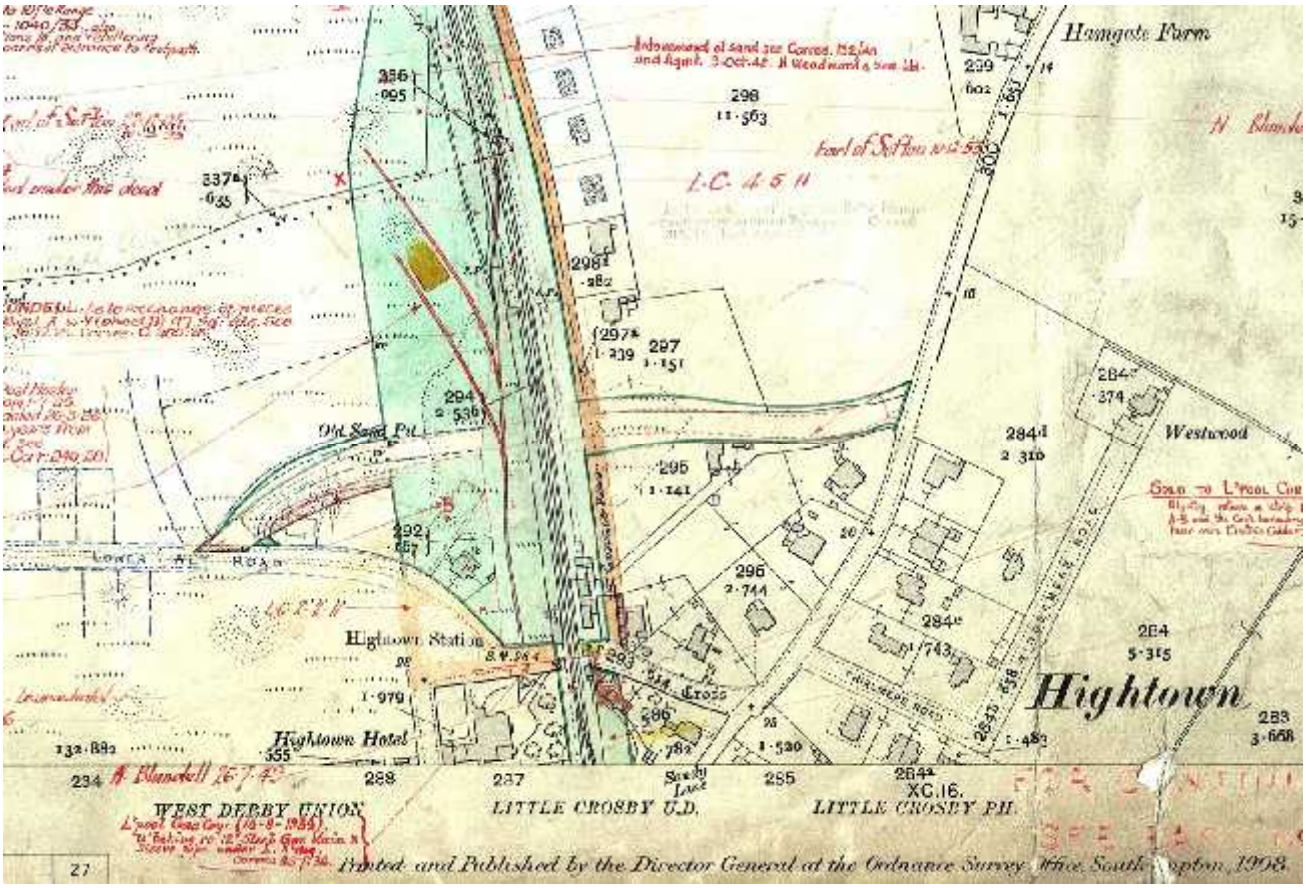


Figure 6. Part of Lancashire & Yorkshire Railway land plan using OS 1:2500 sheets

[4] In Anglesey the c1905 LNWR contract plan for building the Red Wharf Bay Branch served as a land plan throughout the undistinguished life of the line.

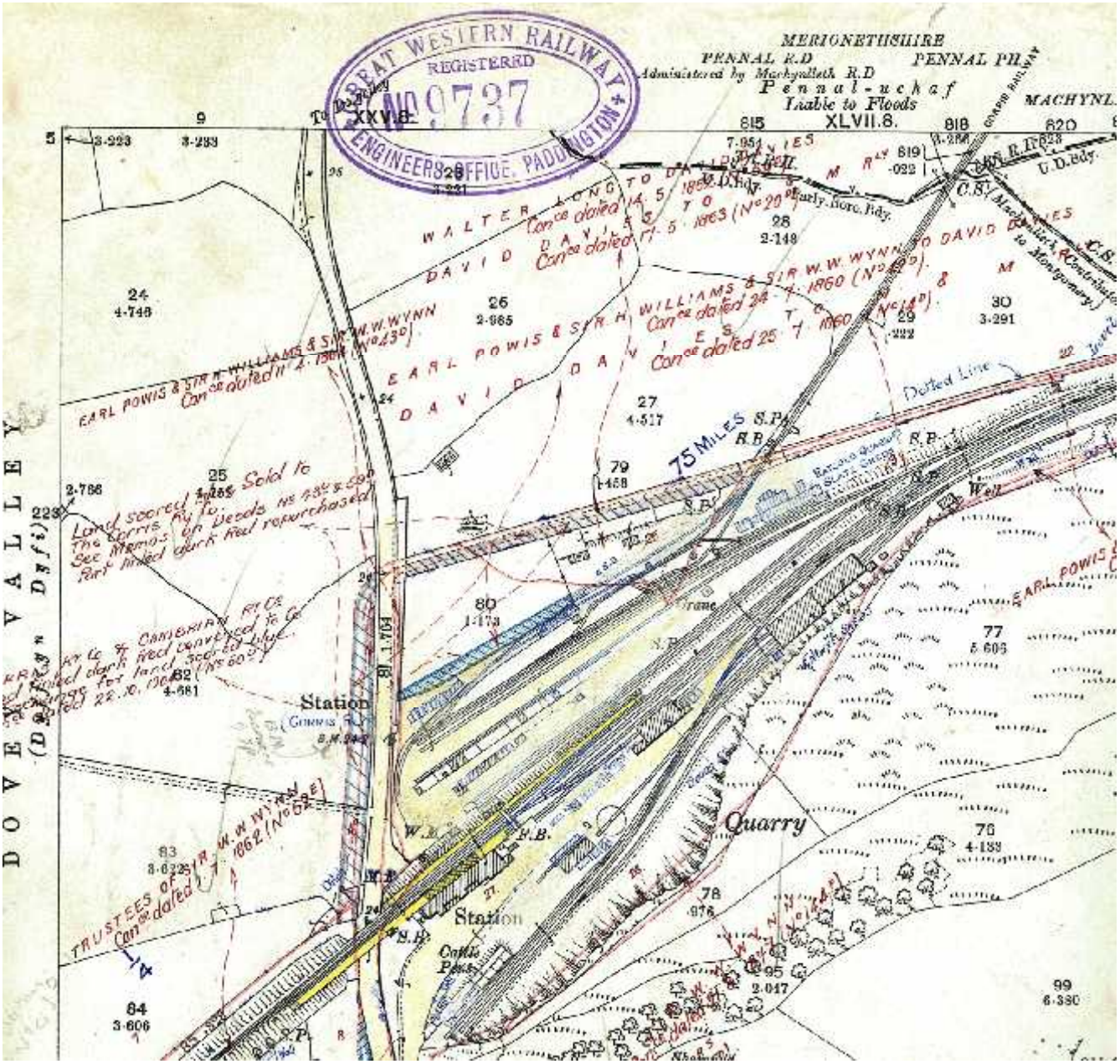


Figure 7. GWR 'stage one' land plan using marked-up OS sheet (compare with the extract of the later printed plan on page 53 of Sheetlines *105)*

The Great Western method of ground survey and production of two-chain[5] scale plans could not react quickly enough to the demands of hundreds of miles of absorbed lines resulting from the 1923 grouping, so they adopted a similar practice to the Lancashire & Yorkshire of using OS sheets as land plans for these lines, this being an economic and rapid expedient. As a first stage they quickly collated all the available groundwork, title, and boundary information manually on to a set of original OS sheets which then formed an immediate working record. To supply multiple copies this way for use by various departments was uneconomic, so they later went a step further and used the data for the

[5] Two chains (132 feet) to the inch, 1:1584, was always a favoured scale for general railway work.

production of standard lithographed plans at the OS scale as detailed by Gavin Johns, the printing and binding work being contracted out.

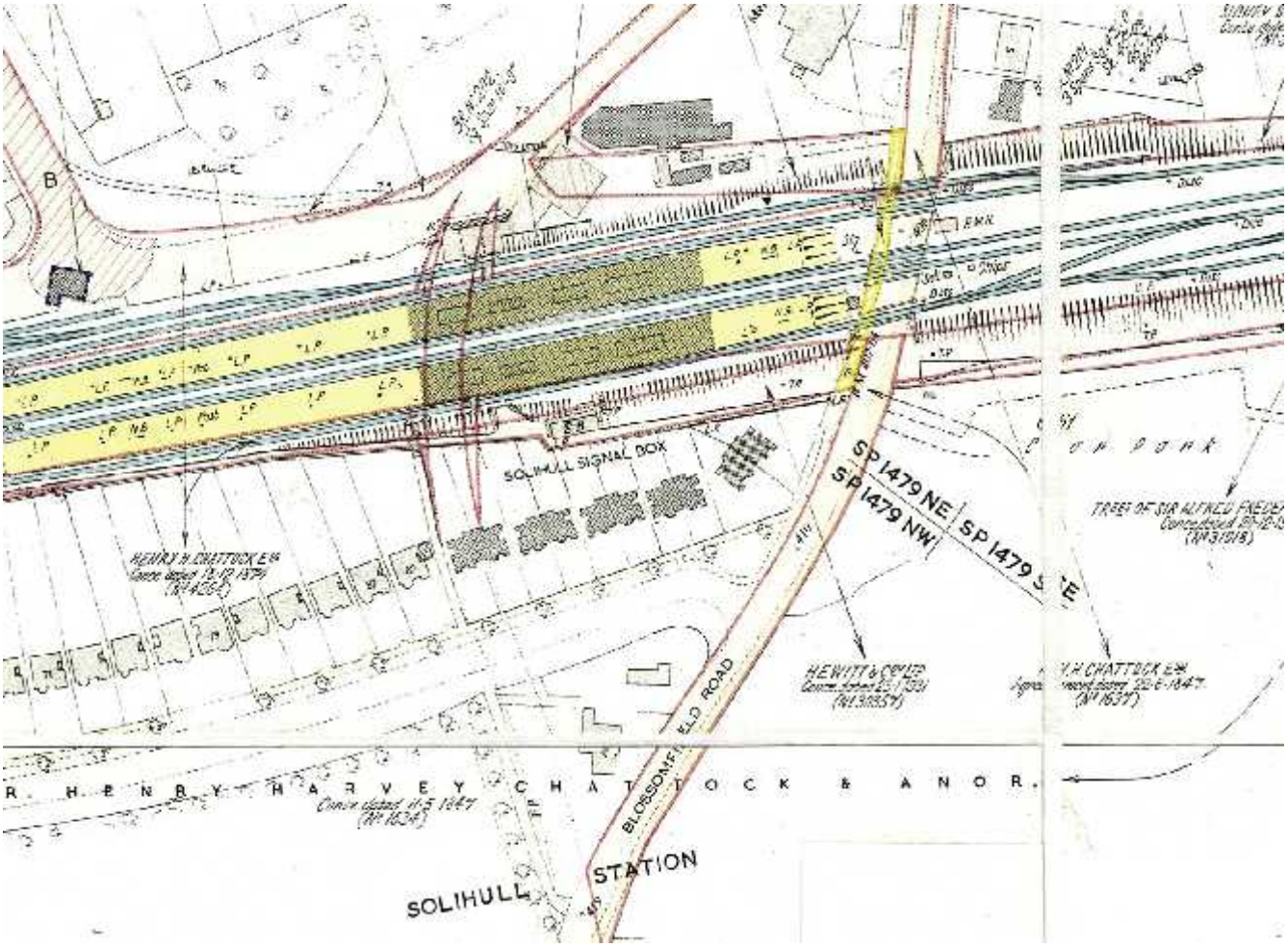


Figure 8. Part of 1:1250 scale Western Region line plan of 1961. Note the sheet intersection marks for the OS plans used to compile it. Detail altered or added by BR shows up more darkly. This copy was for the use of the District Engineer, and omits the traditional colour-washing of railway property.

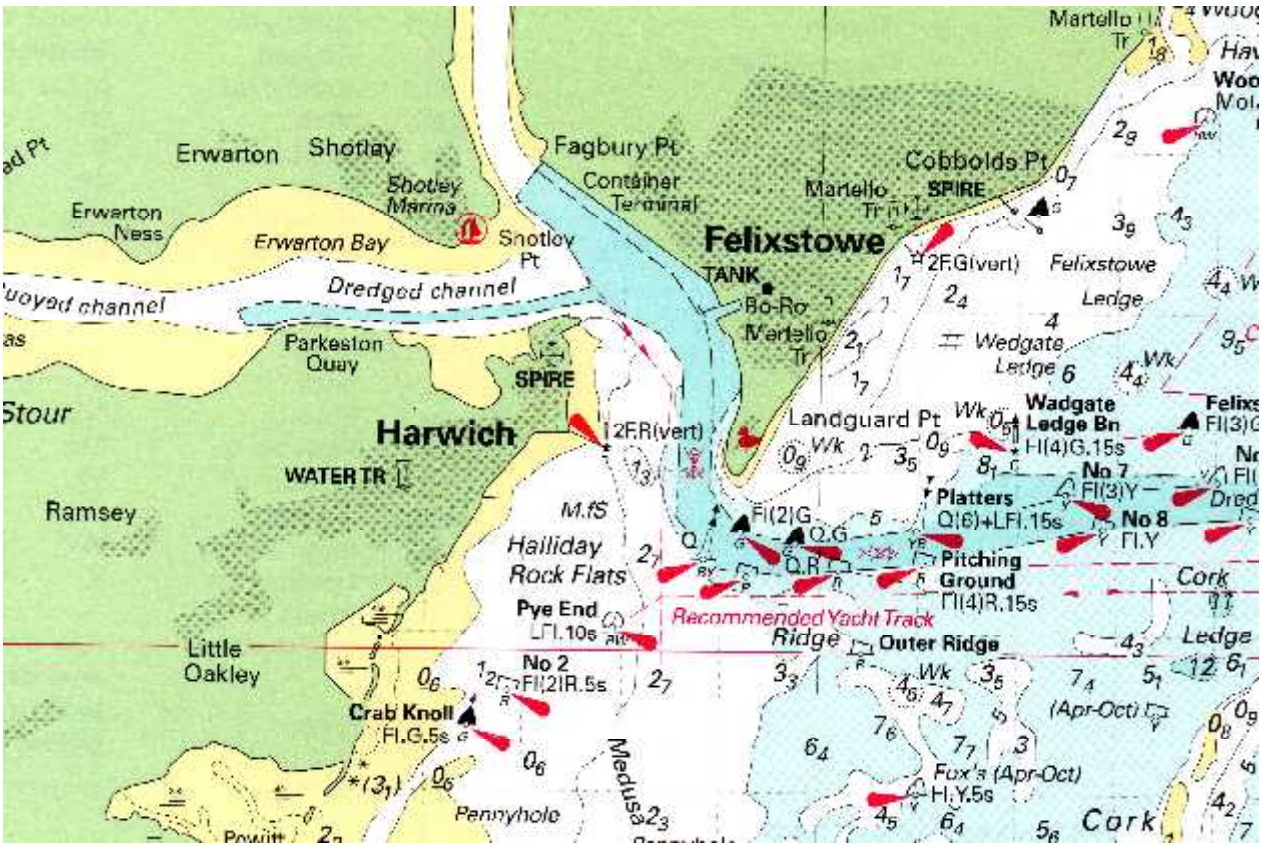
The other three railway groups faced a similar problem to the GWR in 1923 and various OS-based expedients were adopted for their line plans. Regular surveys continued to be put in hand, some of which benefitted from new techniques such as aerial photography.[6] Nationalisation brought little change, the BR regions largely continuing with their existing methods, but the economies of using Ordnance Survey material became increasingly obvious as the post-war national grid coverage extended, including up to date 1:1250 plans of urban areas. The Western Region used these for several lines such as Birmingham to Leamington (see figure 8), and for Wolverhampton.

Topography on railway line plans could quickly get out of date, and where a newer OS sheet was available this was often purchased and used. When selling

[6] Gordon Biddle, *The Railway Surveyors,* Ian Allan Ltd & BR Property Board, 1990, p183

off the sites of redundant branch lines in North Wales following the Beeching closures my first task was to acquire 1:2500 OS coverage of the routes in place of the LNWR two-chain scale line plans from the 1870s – although some of the replacements were already fifty years out of date! The BR Property Board, set up in 1970, took over all responsibility for estate matters and continued the production of line plans from revised OS material, but with a rapidly reducing output as computer technology advanced. Part of the Chester to Holyhead route prepared in the 1990s may have been the final plan in traditional form. Network Rail now uses standard OS digital data covering all their lines, with their own on screen overlays to show ownership and other property details.

It is unfortunate that the railway industry made little significant effort to preserve their historic cartography which has largely been dispersed. What remains is held at Network Rail's York Record Office, with some examples surviving in the National Archives,[7] some county record offices, the National Railway Museum and other public collections.



Part of chart C1, Thames Estuary (1:120,000), one of many charts, historic and modern, on view during the CCS visit to the publishers, Imray Laurie Norrie & Wilson in St Ives, Cambridgeshire in April.

In May, members examined historic naval charts, sketches and surveying instruments during a visit to the archives of the National Maritime Museum.

[7] Particularly in the RAIL class.