

SECTION 12 MAPS (COMMERCIAL, ORDNANCE SURVEY, ESTATE ETC) AND AERIAL PHOTOGRAPHS

REFERENCE MATERIAL

Statutes

Survey Act 1841

Case Law

Hollins v Oldham 1995 C94/0206, unreported. Judicial view on cross roads: 'Burdett's map of 1777 identifies two types of roads on its key: firstly turnpike roads, that is to say roads which could only be used on payment of a toll and, secondly, other types of roads which are called cross roads ... This latter category, it seems to me, must mean a public road in respect of which no toll was payable'.

Kent County Council v Loughlin 1975 (see also Section 8) Denning LJ stated 'The county council archivist produced maps between 1769 and 1819. None showed Fairly Lane at all, but they were to so small a scale that they showed only public carriageway roads'. This remark is taken by some to mean that Lord Denning considered that all highways on pre-1820 maps are public highways. However, it is unlikely that he was generalising on all highways on such maps.

Attorney General v Antrobus (1905) – Judicial view on whether OS maps are evidence of a way being public or private: "Such maps are not evidence on questions of title, or questions whether a road is public or private.....in my opinion admissible on the question whether or not there was in fact a visible track at the time of the survey".

Clode and Others v LCC 1913 - Judicial views on some commercial maps 'I do not think that the Horwood maps were admissible in evidence ... they were apparently but the speculations of a publisher, not official productions, put forth as topographical guides to parts of London. In my opinion these maps are not admissible for that purpose, the maps were just a private adventure for the purpose of profit on the sale of them'.

Attorney General v Horner, 1913 – Some judicial views on the Ordnance Survey map of 1874. 'Such maps are not evidence on questions of title, or questions whether a road is public or private, but...set out every track visible on the face of the ground and are in my opinion admissible on the question of whether or not there was in fact a visible track at the time of the survey'.

Merstham Manor Ltd v Coulsdon UDC 1936 Some judicial views on various maps 'The road is again shown on the map of 1802 by Faden and again in Greenwood's map of 1822 and 1823; but, of course, these maps only show it as a road. There is nothing in the maps to show whether or not the topographer-author was intending to represent the road on his map as a

public highway. All the Ordnance Survey maps show the road, but it was admitted by Mr Godley, a witness from the Ordnance Survey Department, that they show any road which is there on the surface whether it is a public highway or not'.

Masters v SSE [1999] WL 809077: the inferences that can be drawn from thickened casing lines or 'shading' on the south and east sides of roads shown on OS maps. Where evidence is presented which shows that, on the basis of detailed comparison with other public roads in the locality, the shading of the route in question resembles the way other known public carriageways were depicted by OS, the inference may be drawn that the status is similar.

Commission for New Towns v J J Gallagher Ltd [2003] 2 P & CR: Contains a useful discussion on the value of a wide range of mapping evidence in a case where the expert witnesses were Dr Hodson and Professor R Kain

Norfolk County Council v Mason [2004]: Contains a discussion on the value of a number of different map sources as evidence.

Planning Inspectorate Guidance

[Rights of Way Advice Note No.4](#) – meaning of 'cross road' See paragraph 2.24 et seq.

Other Publications

'Rights of Way: A guide to law and practice' by John Riddall and John Trevelyan (published by the Open Spaces Society and the Ramblers' Association Chapter 6.4).

'OS Maps – a concise guide for historians' - R Oliver 1993. As well as providing a concise history of the OS, it includes a lengthy chapter on the depiction of detail on OS maps, comprising a comprehensive dictionary from 'Accuracy' through to 'Zincography.' This is a very useful book for detailed information on OS maps.

'Ordnance Survey instructions to field examiners and revisers and internal Circulars (various dates 1884 – 1961) list in detail the tasks of field examiners engaged in the revision of Ordnance Survey maps at various scales in relation to roads, bridle roads and footpaths.

'Ordnance Survey Maps – a descriptive manual' - J B Harley, 1975 - A comprehensive study of the development of OS maps.

'Maps and Air Photographs,' - G C Dickinson - The first chapter is particularly good on the different mathematical projections developed for maps.

'The Early Years of the Ordnance Survey,' - C Close (published in 1926 and reprinted in 1969), - The early history of the OS, by the Director of the OS from 1911 – 1920.

'Map of a Nation – A biography of the Ordnance Survey' – Rachel Hewitt 2010

'The Ordnance Survey of the United Kingdom' – T. Pilkington White, 1886 – A history of the OS by its serving Executive Officer. Available as a reprint on demand.

'Maps and Map-Makers' - R V Tooley 1952 – Chapter viii covers the County maps in detail.

GUIDANCE

Introduction

- 12.1 The fundamental problem with all maps is that they incorporate compromises in their efforts to represent a spherical surface onto a flat surface. Thus, no one map is capable of simultaneously representing accurately the four factors involved of distance, direction, area and shape. That said, the 17th and 18th centuries saw a tremendous surge in the development of the mathematical requirements of maps, and in the manufacture of the precision instruments required for the accurate assessment of bearing and level.
- 12.2 In many instances, the purpose of the presentation of a map at an inquiry is to support arguments regarding the status of a route. Any route on such a map needs to be assessed carefully against the route shown on the Order Map, to ensure that the routes substantially agree. The age of the map may also be significant in relation to its accuracy, as will the key attached labelling the types or status of the routes inscribed on the map.

Pre-1800 Maps and Atlases

- 12.3 The value of pre-1800 maps and atlases is variable, as they are generally compromised by a lack of sophistication. Colonel Close, a former Director General of the OS, considered that *picturesque and interesting as old county maps are, they leave a great deal to be desired on the score of accuracy errors of up to 10% can be found in Elizabethan maps*. Only a few were based on trigonometric surveys, or on a recognised mathematical projection.
- 12.4 The original six 'Great Post Roads' are shown on Thomas Gardiner's maps of 1677. Secondary roads are also shown on these maps branching off at the main Post Towns. The key attached to some of the maps shows several of these branch routes as 'By posts (foot and horse)'. However, if the key does not accompany the maps, they are unlikely to be good evidence regarding the status of these secondary routes.
- 12.5 Most of the county maps produced in considerable numbers in the second half of the 18th century were in response to an offer by the Royal Society of Arts of a prize of £100 for a map of any county on a scale of 1 inch to the mile. In 1765, Benjamin Donn won the £100 award offered by the Royal Society for his map of Derbyshire.
- 12.6 Many of these early map makers made use of trigonometric surveys in the production of their County maps, including Burdett for Cheshire and Derbyshire, Yates for Lincolnshire, Staffordshire and Warwickshire, Armstrong for Durham, Prior for Leicestershire, Hodkinson for Suffolk and Strachey for Somerset. Cary maintained a high standard with his maps, and in 1794 was employed by the Postmaster General to supervise the survey of 9000 miles of turnpike roads. Cary also employed Aaron Arrowsmith to be the land surveyor for his 'Map of the Great Post Roads between London and Falmouth,' produced in 1784. It was as a result of

Comment [SD1]: Insert a new paragraph 12.3 Prior to the Rights of Way Act 1932 only those maps and records produced under express statutory authority, such as Inclosure and Tithe Awards, or deposited plans, were admissible as evidence in determining the existence or otherwise of rights of way. The Act first provided that *any* map, plan, history or other relevant document shall be taken into account, meaning that documents such as early surveys and Ordnance Survey maps became admissible evidence. Accordingly, the views expressed on such documents in some of the earlier case law should be read with this in mind.

Comment [SD2]: Re-number all following paragraphs

Cary's belief that he could copy OS maps without restriction that, in 1817, the OS took steps to copyright the maps it produced.

- 12.7 Although the second half of the 18th century saw considerable progress, both in the number of maps produced and in their technical accuracy, they were not always reliable for their topographical details. Dr Hodson maintains that *'the greatest scope for error ... lies with the county map, few of which were surveyed entirely de novo.'*¹⁷ Nevertheless, in *Gallagher* Neuberger J was satisfied that the historical maps he was considering demonstrated that Beoley Lane had existed as an identified way since about 1722, accepting that old maps contained inevitable inaccuracies. He was less able to draw confident conclusions from any of the historical maps as to whether or not it was a public carriageway. The map on which he placed most reliance was that of Cary (dated post-1800).
- 12.8 However the evidential value of the older maps can be significant in helping to determine the location of a way, and may be helpful in determining the status of a route, especially in conjunction with other maps. Although the level of accuracy of sketch maps may be difficult to determine, they too can be of value in some circumstances.

Ordnance Survey Maps

- 12.9 The formation of the Ordnance Survey in 1791 reflected the experience gained in the military survey of Scotland by William Roy, the intellectual founder of OS, and was in response to a military need for accurate maps of southern England in preparation for a possible Napoleonic War. Whilst the earliest one-inch maps were produced in response to these military concerns, there was a shortage of trained military surveyors and many of the early maps were produced by local civilian surveyors. The suggestion that all road or ways shown on the first edition of the one inch maps are of roads or ways suitable for wheeled artillery is likely to be no more than a generalisation. However, the Old Series 1 inch maps did label turnpike roads and distinguished them from other roads by a thickening of the casing lines on the south and east side of the road.
- 12.10 Over the years, OS developed a variety of maps to meet the growing need for accurate and up-to-date maps of the UK and the production of maps for sale to the public became an activity of increasing importance to OS from the early twentieth century, although the sale of maps to the public had occurred throughout its existence.
- 12.11 The first one-inch maps (1:63,360) were produced in 1801 and covered Kent, part of Essex and London. It was not until 1873 that the whole of the UK was covered. They were relatively unsophisticated monochrome maps, with relief indicated solely by hachures. Inspectors may also be presented with copies of the Ordnance Drawings, which were carried out for southern England over the period 1789 – 1840. They were drawn to a variety of scales, 2 inches, 3 inches and 6 inches to the mile. Some of the drawings were made 20 years before the relevant one-inch map was

¹⁷ RWLR article 'The evaluation of older maps' July 1999, section 9.3, page 31

published. Some larger scale drawings show footpaths which did not appear on the printed map.

- 12.12 A demand for maps showing the countryside on a larger scale led to a six inch to the mile map of Ireland, (1:10,560). This was then extended to the rest of the UK. From 1840, the one inch maps of northern England and Scotland were reductions of the six-inch survey.
- 12.13 The industrial development of the Victorian era, followed by the rapid expansion of towns and communications, led to a demand for even larger scale plans. In 1858, it was decided to publish the whole of the UK on a scale of 1:2500 (approximately 25 inches to the mile).
- 12.14 The first edition OS maps, in the eyes of Colby, the Superintendent of the Survey, were *prodigies of excellence in comparison with earlier maps*, but it became apparent that some of the early one-inch maps suffered from errors as they *had been made in a hasty manner during the war*. This was particularly true regarding the maps for Lincolnshire, Hampshire and Lundy Island, although Colby had sought to identify, correct and eliminate inaccuracies found during the surveying process. In addition, the maps had been constructed using a mathematical projection which had some inherent inaccuracies at the extremes of the map to the north and south. To overcome this problem, the OS utilised a series of meridians for differing parts of England and Wales. As a result, roads and paths on adjacent maps at county boundaries do not always match precisely, and reflect the north/south errors in the projection. However, since this mismatch is created by the projection process used for the making of the map, the positional accuracy is not significant.
- 12.15 The process of refashioning the old County Series scale maps to National Grid standards was undertaken between 1948 and 1980. The process, referred to by the OS as 'Overhaul' or the 'Cotswold Adjustment', attempted to eliminate errors, particularly those of distortion and mismatching. The methodology used involved a degree of 'cut and paste' technique to align the former projection with the National Grid. Recent advances in global positioning systems and their ready availability have revealed positional discrepancies on the ground. These differences, where they occur, are normally of 3 – 5 metres, but can be up to 10 metres in places. However, the fact that satellite technology may demonstrate that all the objects in a given area are a few metres out in relation to their current depiction on a two-dimensional plan will have little impact upon the relative position of one feature to another on the ground. Any positional inaccuracy revealed by GPS technology does not detract from the usefulness of pre-GPS Ordnance Survey maps as a record of what was observable on the ground at the time of the maps were surveyed.
- 12.16 The status of routes on early OS maps is still a matter of debate at inquiries. The following points may assist in reaching a decision on the evidence provided by a particular map.

- 12.17 Bench marks were located along a line of levelling, and often followed lines of communication. However, they can also be found on rocks in the middle of private land. Consequently it cannot be assumed that a bench mark is indicative of a public right of way.
- 12.18 Access for surveyors was governed by the Survey Act of 1841, which gave surveyors virtually unlimited access. Thus, the indication of spot heights along a route would not necessarily be proof of a public right of way.
- 12.19 The practice of annotating paths 'F.P.' on large scale maps from 1883 arose from an instruction to surveyors issued in February of that year (quoted by Dr R Oliver in *'OS Maps – a Concise Guide for Historians'*) that *'the object of... 'F.P. being that the public may not mistake them for roads traversable by horses or wheeled traffic'*. The inclusion of "F.P." gave rise in 1885 to letters being written to *The Times* complaining that the public were likely to view such annotations as indicating the existence of a public footpath. On behalf of the OS, Col. Pilkington-White responded that it was the practice to show paths on the ground, irrespective of whether they were public or private. From 1888, Ordnance Survey maps carried a disclaimer to the effect that the representation of a track or way on the map was not evidence of the existence of a public right of way¹⁸.
- 12.20 An 1893 OS circular instructed that *"all footpaths over which there is a well-known and undisputed public right of way should be shown"*. This instruction appears to be at odds with the disclaimer that the post-1888 maps carried and with the 1885 response of Col. Pilkington-White in *The Times*. The 1893 Circular was also issued after the 1893 Dorrington Committee had concluded that no inquiry by the surveyor could determine whether a path was a public or private one.
- 12.21 The Instructions to Surveyors (see 'Other Publications' above) set out the parameters under which the surveyors were to undertake their task. It was not until 1905 that surveyors were instructed that *'OS does not concern itself with rights of way, and survey employees are not to inquire into them.'* However in the same paragraph of these Instructions, there is a note stating that *'A clearly marked track on the ground is not in itself sufficient to justify showing a path, unless it is in obvious use by the public'*. The 1905 instructions appear therefore to be somewhat ambiguous; subsequent instructions to surveyors contain equally ambiguous instructions as surveyors were given directions as to the nature of paths that should and should not be recorded whilst maintaining that public rights of way were not the concern of OS.
- 12.22 The Dorrington Committee also recommended the adoption of a fourfold classification scheme for roads being shown on OS maps, with each classification being dependant on the width of the road at issue and the type of traffic each road could carry. In relation to what were to be shown as first and second class roads, the committee considered that it

¹⁸ On late 20th century OS maps which show those ways which are recorded in definitive maps and statements, the disclaimer is modified to acknowledge that some routes shown are public rights of way.

was 'desirable that the roads thus classified as first and second class should be of such a nature that the public are certain of having free access over them, not disturbed either by their physical condition or by their being private' and that 'any of the roads in these two classes which are not repaired by an authority under legal obligation to maintain them, and are in consequence not highways, should be indicated by a slight modification of the characteristic adopted, such as dotted lines. This paragraph would apply principally to roads in public and private parks, private roads of good character, but not necessarily open to the public.'

- 12.23 A number of other documents were produced in connection with the production of OS maps which can be of assistance in providing supporting evidence of the existence and status of some routes. Information on named routes may be found in the relevant Object Name Books, which provided details of the authorities for named features. Some of the County Series maps were accompanied by Books of Reference, which contain details of the numbered land parcels. Other sources of information include Boundary Remark Books and the subsequent Boundary Record Maps.
- 12.24 In 'OS Maps – a concise guide for historians', Oliver states that *Footpaths and bridleways were not normally identified as such on 1:10,560 and larger scale mapping prepared before c1883, although occasional exceptions are encountered, e.g. on several 1:10,560 or 1:2500 first edition sheets in Yorkshire, North Riding and southern Durham. Otherwise, particularly on 1:10,560 maps, foot and bridleways, tracks and very minor roads look much the same.* . Oliver also states that pecked lines were used for features which were not obstructions to pedestrians, which were indefinite, or surveyed to a lower standard than usual. They could also be used to indicate overhead details such as electricity transmission lines.
- 12.25 *From 1884 onwards on the large scale plans, those metalled public roads for wheeled traffic, kept in proper repair by the local highway authority, were to be shown with shaded or thickened lines on the south and east sides of the road.* In a paper by Yolande Hodson 'Roads on OS 1:2500 Plans 1884-1914' (RWLR July 1999) explains the background to this practice and Dr Hodson remarks that the primary purpose of the shading of roads on the large-scale maps was to guide the draftsman in the preparation of revisions to the 1" maps. Although Dr Hodson concludes that shaded lines are not necessarily an indication that roads shown in such a manner were public, the judgment of Hooper J in the case of *Masters* at first instance suggests that, in some circumstances, this may have been the case.
- 12.26 The 1" series of maps produced from the 1890s onwards (including the 'Popular' series) were marketed at the touring and walking public and paved the way for the current small-scale Explorer and Landranger series. These maps were produced to compete with the product of the commercial map makers in business at the time (primarily Bartholemew, whose ½" series had been extensively used by the military in the Great War as it contained a coloured road classification system). In 1912 a War

Office Committee had recommended the introduction of a coloured system of road classification for OS maps which was used in the preparation of the Popular Edition (1919 – 1926). The Committee recommended that "*Carriage Drives, private roads and minor roads are never coloured*"; whereas on the popular edition the key stated "*private roads are uncoloured*".

- 12.27 Until 1931, the OS and highway authorities used different systems to classify roads. Although the numbers used in the Ministry/Department of Transport's national classification began to appear on 1:2500 maps from 1938 and on 1:10,560 maps from 1945, OS had begun publishing the half inch Ministry of Transport Roads Map series showing the national classification in 1922.
- 12.28 Most roads on OS current 1:25,000 and 1:50000 maps are coloured according to their category, as identified in the key/legend. However, some minor ways may be left uncoloured. These are known informally as "White Roads." The OS has consistently felt unable to identify the status of these minor ways which are described as "other road, drive or track".
- 12.29 The areas of each field were published on 1:2500 maps, with a parcel number to identify the particular field. Bracing indicates parcels that were measured together. A road braced with a private field may be suggestive of private status. But this would be no more than the surveyor's perception and would carry little evidential weight.
- 12.30 Public roads depicted on 1:2500 maps will invariably have a dedicated parcel number and acreage. It has been argued that all parcels which have the shape of a way and are so numbered and measured are therefore highways. This argument has not been substantiated. Such depiction is far from conclusive for the confirmation of highway status.
- 12.31 Later OS surveys and maps, especially the larger scale plans, provide an accurate representation of routes on the ground at the time of the survey. The inaccuracies of the earlier projection were virtually eliminated by the development of an alternative form of map projection. However, it should be emphasised that the depiction of a way on an OS map is not, of itself, evidence of a highway. The courts have treated Ordnance Survey maps as not being evidence of the status of a way. For example, in the case of *Attorney-General v Antrobus* [1905] 2 Ch 188 at 203, Farwell J stated in relation to an Ordnance map of 1874:
- "Such maps are not evidence on questions of title, or questions whether a road is public or private, but they are prepared by officers appointed under the provisions of the Ordnance Survey Acts, and set out every track visible on the face of the ground, and are in my opinion admissible on the question whether or not there was in fact a visible track at the time of the survey".*
- 12.32 Similarly, in *Moser v Ambleside Urban District Council* (1925) 89 JP 118 at 119, Pollock MR stated:

"If the proper rule applicable to ordnance maps is to be applied, it seems to me that those maps are not indicative of the rights of the parties, they are only indicative of what are the physical qualities of the area which they delineate....."

- 12.33 In *Norfolk CC v Mason* [2004] NR205111, Cooke J observed "*Throughout its long history the OS has had a reputation of accuracy and excellence..... It has one major, self-imposed, limitation; it portrays physical features, but it expresses no opinion on public or private rights—though no doubt it is obvious what a blue line labelled "M1" must mean.*"
- 12.34 Nevertheless, the inclusion of a route on a series of OS maps can be useful evidence in helping to determine the status of a route, particularly when used in conjunction with other evidence (Section 2.16 to 2.21 'Evidential Weight' refers).

Other post-1800 Maps

- 12.35 The 19th century saw a considerable increase in the production of maps in the UK. Estate Maps were normally compiled by professional surveyors and are therefore likely to be reasonably accurate. However, they would not necessarily include any public rights of way which crossed the estate. They usually form part of a collection of estate papers, which may be deposited in county record offices.
- 12.36 Bryant and Greenwood produced well-made maps, using surveyors and a triangulation system. Greenwood published surveys of 38 counties between 1817 and 1834, while Bryant covered 11 English counties between 1822 and 1835. There was considerable competition between them, with both publishing maps virtually simultaneously for Surrey (1822/1823) and Gloucestershire (1824). The competition between Bryant and Greenwood, and the other map makers, may explain why the standards of accuracy of some of the maps produced differ from county to county. Though Greenwood employed his own surveyor for his triangulation work, there was criticism by Thomas Hodgson, also a surveyor, that Greenwood's system of measuring distances for his maps was based on 'pacing' not 'chaining.' Hodgson suggests that *the high costs of Greenwood's surveys and the speed with which they were done, reinforces the view that his topographical mapping was imperfectly executed*¹⁹.
- 12.37 Other map makers producing County maps at the time included Baker, Campbell, Donald, Drinkwater, Ellis, Fryer, Green, Hennet, Hutchings, Jeffreys, Lindley and Crossley, Phillips, Price, Ruff, Swine and Teesdale. Most of these businesses collapsed due to the increasing competition from the OS.
- 12.38 Maps produced to record specific activities, such as mining and encroachment, are generally good evidence of what they portray.

¹⁹ RWLR article 'The evaluation of older maps' July 1999, section 9.3, page 31

- 12.39 In 1901, the War Office was using large numbers of the half-inch series maps produced by Bartholomew. These had been reduced from OS maps, but Bartholomew's maps included a new method of layer relief colouring, which was particularly popular with the War Office.
- 12.40 Some Motorists' or Cyclists' maps are occasionally quoted as evidence that routes had been used by vehicles prior to the date when the Road Traffic Act 1930 made the use of motor vehicles on bridleways and footpaths an offence without lawful authority. Certainly there is some evidence that the CTC (Cyclists Touring Club) corresponded with Bartholomew regarding routes used by their members. However, current evidence indicates that, although Bartholomew were highly regarded as map producers, they did not employ independent surveyors to carry out any surveys on the ground nor to determine the nature and status of the roads on their maps. Moreover, they do not appear to have examined the legal status of the routes on their Cyclists' Maps before colouring them for use as suitable for cyclists. Neither do they appear to have assessed the legal status of the roads on their Motorists' Maps prior to publication.
- 12.41 As a result of the OS taking HG Rowe and Co to the High Court in 1913 for infringement of its copyright, it was legally established that Rowe's New Road Map for Cyclists and Motorists was no more than a direct photographic reduction from the OS map.
- 12.42 Commercial maps are rarely sufficient in their own right to permit the inference to be drawn that a route is a highway. However, combined with evidence from other sources, they can tip the balance of probability in favour of such status.

Aerial Photography

- 12.43 Aerial photographs may be presented at an inquiry in order to confirm the existence of a route at the time the photographs were taken. Confirmation is often difficult, especially if confirmation of a footpath is sought from a single photograph. It must be borne in mind that it is hard to determine the correct orientation of the photograph unless the direction of the flight has been indicated on the back of the photograph. It is essential to try and find 3 points on the photograph which are shown on the map. The orientation of the photograph should be checked with a map, and it must be remembered that the scale of the map and the photograph is likely to differ. The time of day a photograph was taken can be significant, as shadows can hide or distort the line of a narrow path. An oblique photograph may also hide a number of features which exist on the map.
- 12.44 An aerial photograph cannot be taken as evidence of what rights might exist over a route, only that a route might be discernible on the ground at the date when the photograph was taken.

Concluding Comment

- 12.45 Most maps are potentially helpful evidence of the physical existence of routes, especially if consistently shown. However, they are less helpful in terms of determining the status of the routes shown, and all mapping evidence is more helpful in conjunction with other evidence.