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Acknowledgments

This guidance note was prepared by the members of the RICS Boundaries and Party Walls Working Group (B&PWWG), the Mapping and Positioning Practice Panel (MAPPP) and the Geomatics Global Professional Group Board (GGPGB). The B&PWWG is a cross-professional group specialist panel of technical and chartered surveyors from the building, geomatics (land surveying) and rural areas of practice, and brings together some of the leading and most distinguished professional chartered surveyors working within the arena of neighbour disputes. The group’s remit includes boundaries, party walls and certain easements such as rights-of-way and rights-of-light. All of these are crucial to the physical and legal extent of property ownership and their determination governs matters of use, adaption, transactability and value. These issues lie at the core of RICS members’ professional work.

The B&PWWG also produces professional guidance and information, RICS public guides, RICS client guides, policy responses and journal articles and has been involved in the inception and ongoing operation of the RICS Dispute Resolution Service (DRS) and the Neighbour Disputes Service. The B&PWWG exists to promote understanding and best practice in the areas of land transfer, registration and administration, encroachments, cadastre and boundary issues, this remit extending to an overview of the relevant laws, both within the home nations of the United Kingdom and overseas.

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B&PWWG output can be found on the RICS Land web page at www.rics.org/land, and on the RICS Geomatics web page at www.rics.org/geomatics
This is a guidance note. Where recommendations are made for specific professional tasks, these are intended to represent ‘best practice’, i.e. recommendations which in the opinion of RICS meet a high standard of professional competence.

Although members are not required to follow the recommendations contained in the note, they should take into account the following points.

When an allegation of professional negligence is made against a surveyor, a court or tribunal may take account of the contents of any relevant guidance notes published by RICS in deciding whether or not the member had acted with reasonable competence.

In the opinion of RICS, a member conforming to the practices recommended in this note should have at least a partial defence to an allegation of negligence if they have followed those practices. However, members have the responsibility of deciding when it is inappropriate to follow the guidance.

It is for each member to decide on the appropriate procedure to follow in any professional task. However, where members do not comply with the practice recommended in this note, they should do so only for a good reason. In the event of a legal dispute, a court or tribunal may require them to explain why they decided not to adopt the recommended practice. Also, if members have not followed this guidance, and their actions are questioned in an RICS disciplinary case, they will be asked to explain the actions they did take and this may be taken into account by the Panel.

In addition, guidance notes are relevant to professional competence in that each member should be up to date and should have knowledge of guidance notes within a reasonable time of their coming into effect.

This guidance note is believed to reflect case law and legislation applicable at its date of publication. It is the member’s responsibility to establish if any changes in case law or legislation after the publication date have an impact on the guidance or information in this document.

**Document status defined**

RICS produces a range of professional guidance and standards products. These have been defined in the table below. This document is a guidance note.

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1 Introduction

The physical extent of property ownership and rights of use are basic attributes of land and buildings and are capable of being evaluated by property professionals. Uncertainty of the extent of ownership and its associated rights affects the physical use and rights to repair, maintain, gain access to and obtain value of the land. Certainty is critical for the successful sale or purchase of real property and it governs the enforceability of property rights, which materially affects the value of the property as collateral for a loan. The true physical extent of ownership and rights in real property are fundamental to the successful registration of the property title, effective development control and many aspects of the enforceability of regulations governing land, its ownership and use. These rights may extend above and below the land surface.

As the pressures of development increase in today’s society, particularly in urban areas, boundaries and other incorporeal rights gain greater importance, both economically and socially. Householders extend their houses and build conservatories often up to their boundaries, and developers are no different in wanting to maximise the use of their equally valuable and scarce land. Not surprisingly, uncertainty in the limits of ownership and rights of occupation has led to a steady increase in disputed boundaries.

The purpose of this guidance note is to:

- provide RICS members with an understanding of the value and role that clearly identifiable boundaries provide
- enable, wherever possible, accurate and comprehensible information to be provided by professionals, with as little scope for misunderstanding as practicable
- help in the event of a dispute over boundaries, to set out the facts in a manner that assists the parties, their legal advisers and the courts and
- safeguard the interest of clients and to promote the public interest.

The aim of the RICS Boundaries and Party Walls Working Group (B&PWWG) and the RICS Dispute Resolution Service is to encourage private individuals, businesses and professional advisers (particularly the legal profession) to select a suitably qualified chartered surveyor as an expert who can scrutinise and understand the documents and maps, carry out inspections (often with a measured land survey) and prepare reports.

There may also be a requirement to provide a formal expert report and present it to a court in the same manner as any other expert witnesses, such as forensic scientists, medical practitioners and other specialists. Currently, while some individuals and businesses are aware of the existence of professionals who specialise in boundary demarcation, many are not. Therefore, they may seek advice from unqualified persons, often to the detriment of an accurate diagnosis of the problem and invariably leading to unnecessary expense, or worse still, ill-founded litigation. It is also worth noting that justice can only be achieved if both the claimant and the defendant have their cases presented properly and in full. Accurate information and assessment at an early stage can often assist in obtaining a prompt and cost-effective resolution of otherwise contentious cases.

RICS is a member of an international coalition initially comprising 20 founder member organisations to establish International Property Measurement Standards (IPMS). IPMS will ensure that property around the world is measured consistently. The first edition of these standards is due to be published in 2014 and the resultant IPMS will relate to and interconnect with all RICS published material (including practice statements, guidance notes and information papers).
2 Stage 1 – Setting up the project

This stage covers the various steps that occur from initial contact to confirmation of instructions. It is essentially a dialogue between the chartered surveyor and the client and/or their professional adviser (for litigious cases the adviser is usually a solicitor). During the course of the dialogue, the chartered surveyor:

- identifies the key issues and requirements
- considers any due diligence issues and potential professional conflicts of interest
- ascertains which issues are within their competence and which of those they can help with and
- gives some idea of the cost and the basis of charging.

The client should be given clear guidance as to what the chartered surveyor can and can’t do, what results to expect, and (at least in broad terms) the likely cost and what terms, conditions and limitations apply. The overriding onus is on chartered surveyors to give impartial advice on matters within their expertise, even if it is different from the client’s view.

2.1 Initial contact

Initial contact may arise in one of the following ways:

Direct contact by a member of the public: based on information from an internet search, the RICS Contact Centre, commercial directories, or personal recommendation. This initial contact needs to be handled carefully because the potential client may have little knowledge of what a chartered surveyor does and the limitations on their role. RICS provides public guides which may help and have been distributed to Citizens Advice Bureaux across England and Wales (see appendix A for a list of public guides).

Professional adviser: including solicitors, accountants, architects, consulting engineers, and other chartered surveyors. They should have a greater awareness of what the instructed chartered surveyor can and can’t do, but there will still have to be a process of defining the precise issues to be addressed.

Direction of the courts: where litigation is already in process, the judge may make an order that a particular chartered surveyor (agreed between the legal representatives) should be instructed to do specific work. This has consequences for the chartered surveyor: he/she is answerable to the court and may apply to the judge for directions when he/she is uncertain about how to proceed. Further details are contained in the Civil Procedure Rules Part 35 (CPR 35) (www.justice.gov.uk/civil/procrules_fin/menus/rules.htm). In practice the actual contact will usually come from the legal representatives, normally the solicitor for the claimant.

Alternative Dispute Resolution (ADR): this is dealt with in detail at section 6, but in general terms courts are keen for the parties to resolve matters out of court by ADR, of which mediation is an important part. Referrals may therefore come by this route. RICS operates the Neighbour Disputes Service and may contact the chartered surveyor.

Nil-cost initial consultations: RICS operates a scheme by which volunteer chartered surveyors may be contacted by the public for a free half hour consultation by telephone. Although there is no fee involved, the chartered surveyor may be liable for the advice given, which should be of the highest professional standard. The same principles apply as for other contacts: identify the problem and what can be done to help, and refer the contactee to other professionals for anything else.

Irrespective of the mode of initial contact, it is vital not to be drawn into expressing an opinion on the matter for investigation at this stage: the initial contact may come from someone wishing to find an expert who agrees with their own view. Similarly, ascertain and carefully note the status i.e. professional or lay-person of the person making the approach. All the chartered surveyor needs to do is to identify the key issues and requirements and whether the nature of work involved is within his/her sphere of expertise and competence. If the chartered surveyor is qualified and prepared to undertake the work this should be stated together with the typical terms of business that might apply.

2.2 Anticipated role

This guidance note covers boundary identification, demarcation and dispute resolution. The former is usually non-contentious and might involve:
initial scoping advice where, for instance, a client (often a developer) requires the precise boundaries or subdivisions to be identified and set out or lost/disturbed survey markers reinstated

a property owner requiring a deed plan to be submitted to Land Registry on first registration of title in connection with a purchase or sale and

advice on boundaries in connection with valuation, party wall matters, development proposals, short leases, access for repairs, extent of rights of way, burdens, easements etc.

The chartered surveyor will therefore act as a boundary consultant, this being simply an extension of his/her normal work.

Dispute resolution covers contentious cases where there is, or is the likelihood of, a disagreement over boundary issues such as the precise line of the boundary, rights of way or access, etc. In this case the chartered surveyor’s report may be used in court, and he/she will be acting as an expert witness or as a single joint expert when instructed by both sides. It is important to establish early on which role applies, especially since the chartered surveyor may start off as a boundary consultant, but discover later that the issues have become contentious and is now required to act as an expert witness. Although CPR 35 strictly only applies to the expert witness, it is good practice to execute all work in the spirit of CPR 35. There is nothing to be gained by giving the client partial or biased advice during the initial consultation, since this might encourage them to adopt a position that would be untenable in the more rigorous setting of court proceedings. A point that cannot be stressed enough to the client is that under CPR 35 the chartered surveyor’s primary responsibility is to the court, not to the parties instructing or paying them.

It is often useful to have separate terms of business for expert witness cases as the relevant caveats can be usefully included within them. The standard terms of business (for non-contentious cases) should note when other terms of business apply to expert witness work.

2.3 Identifying the requirement

2.3.1 It may be that the chartered surveyor can identify the issues in the case from telephone calls, correspondence, and a careful examination of the outline evidence supplied. In more complex cases an initial meeting, with or without a preliminary site visit, may be useful. In all cases careful notes need to be kept as these form a vital record, especially since cases may run for several years. Bear in mind that all correspondence may be subject to ‘disclosure’ and is not legally privileged: if court proceedings commence, file notes and correspondence may be subject to an order for ‘discovery’ leading to examination and questioning in court. Unguarded comments may be cited, to the detriment of the chartered surveyor’s credibility, some years later.

2.3.2 The client may have unrealistic expectations of what the chartered surveyor can do. The client may assume that the chartered surveyor can provide a complete and definitive solution to the boundary problem. This is unlikely, since legal and factual issues may override the survey evidence. In court the judge will have access to a whole range of factual evidence (tested by cross-examination) and legal argument in addition to the survey evidence when making a decision. Chartered surveyors may comment on legal matters, but for definitive legal advice a client will need a lawyer. Explaining this at the outset will prevent recriminations later. Chartered surveyors are not publicly appointed quasi-judicial officials with the power to make legally binding decisions as is the case in some continental European countries, notably Germany and Switzerland. They provide a service to the client, lawyers and the court that helps to resolve the problem, but they have no power to bind the court, which has the sole discretion whether to accept (in whole or in part) or reject the solution put forward.

Chartered surveyors are not the client’s case manager and should not comment on the strengths and weaknesses of the legal arguments.

2.3.3 Services that may be offered include:

- accurate measured survey of the land (see section 4.2)
- evidence gathering (see section 2)
- analysis (see section 5.1)
- presentation of results in a plan or report (see section 5.2)
- expert witness for one party or single joint expert for both (see section 2.2)
- giving evidence in court (see section 7)
- mediation (see section 6.2)

2.3.4 It is essential that the chartered surveyor is confident that the requirements are within the ambit of his/her professional knowledge and competence; that he/she has the correct training and experience for the task; and has adequate professional indemnity (PIL) cover. Possible conflicts of interest should be considered. It is essential that the chartered surveyor is familiar with and complies with the RICS practice statement Surveyors acting as expert witnesses (2014).

2.3.5 An initial meeting is useful. For simple cases this can be combined with the site visit for the measured survey. For more complex cases a meeting may be needed when the project is being set up, before confirmation of instructions. The client (or adviser) should be asked to explain the problem in their own
words. The chartered surveyor must then systematically question them to get at the key issues. Commonly in boundary cases a great deal of information is given, much of which is not relevant to the chartered surveyor: general problems with the neighbour, harassment, damage, planning, amenity, lifestyle and often issues in other aspects of their life. The chartered surveyor needs to tease out the issues that he/she can help with (essentially plans, maps and photos, evidence of factors that are visible on the ground, and measurement). The chartered surveyor should identify the evidence relevant to these issues and advise who to turn to on non-survey issues. This may be the first time that the problem has been deconstructed and both the client and their adviser are usually grateful for the process of turning a general dispute into a series of issues that can be tackled in logical order. In addition to the boundary position, such issues may include:

- easements, such as right of access or drainage runs
- other rights, such as riparian, mineral, rights of light
- obstructions of views
- damage to trees and hedges or by their root systems or
- natural ground support.

Noise, privacy, lifestyle and even physical assault may be problems that the client is facing, but they are outside the chartered surveyor’s remit.

The meeting can also be used to explore:

- what outcome the client wants to achieve
- whether these aims are reasonable
- whether there is a compromise or fall-back position
- the minimum that the client must achieve
- differences between the client’s and neighbour’s views
- whether the boundary issue is part of a wider campaign against the neighbour
- whether litigation is contemplated
- the level of cost and inconvenience that would make the client accept the status quo
- whether the client would accept the status quo in return for compensation
- whether the dispute is actually about the position of the boundary or its ownership or its manifestation (style, condition, dimensions and materials) or about something else altogether and
- the current level of animosity.

It is useful to have a checklist of the points to hand at the meeting. The client’s views may change over time, so the points may need to be revisited later. It is best to avoid contact with the neighbour, but if contact occurs the chartered surveyor must remain calm and polite and stress his/her impartiality. Keep notes of any conversation.

### 2.4 The contract

#### 2.4.1 At the end of the setting-up phase, the client should be clear what the chartered surveyor is going to do, the form of the results, and the likely costs or basis of fee charging. The client should also be aware of what the chartered surveyor will not do, and the fact that, since the chartered surveyor is impartial, the chartered surveyor’s conclusions may be different from their own. There will then be an exchange of letters formalising the contract.

#### 2.4.2 The client or his/her professional adviser should send confirmation of instructions that will formally set out what the chartered surveyor is to do, and will normally include the evidence being supplied to the chartered surveyor. In some cases the letter of instruction may be copied in the chartered surveyor’s final report.

#### 2.4.3 The chartered surveyor must in any event confirm the requirement and set out the basis of charging, (where appropriate) the likely cost and the responsibility for and timing of payment(s). In litigious cases and expert witness work RICS recommends contracting through professional advisers (usually solicitors) wherever possible. In the event of late or non-payment this can make final payment easier to pursue than with private individuals. If the contract is with the solicitor, that solicitor/firm are responsible for the chartered surveyor’s fees unless they state otherwise, although it is wise to obtain a formal letter of undertaking. It is good practice to include the chartered surveyor’s terms and conditions with the contract letter or the RICS Terms and conditions of contract for land surveying services. An example model terms of business is attached at appendix D. Reference should also be made to the RICS practice statement Surveyors acting as expert witnesses (2014), and any other protocols (for instance, the protocol for appointment of experts in CPR 35) that apply.

#### 2.4.4 The level of expertise and experience, as well as the geographical location of the chartered surveyor relative to the client/site, among other issues, may affect the level of fees to be charged. It is advisable for the chartered surveyor to present a copy of his/her fee schedule (and basis for the rate charged) to the client and/or professional adviser at the initial meeting.

#### 2.4.5 Litigation is a very expensive process, and records should be up-to-date, detailed and comprehensive since chartered surveyors must be able to show that their costs are reasonable. This may be done by demonstrating:
that the hourly or daily rate is a reasonable rate for a boundary specialist chartered surveyor

that each hour charged for has been reasonably spent (time sheets and an activity list are essential)

a list of disbursements such as materials, third-party data costs, travel and subsistence costs, etc.

2.4.6 There are several logical points when an invoice may be raised. The first is on completion of the expert report – usually (but not always) a month to six weeks from instruction. There may then follow a period of months (or even years) when little happens apart from requests for copies of the report and the occasional meeting being made. Sometimes a meeting of experts may be required. A running total of costs during this period should be maintained and invoiced at appropriate points such as the experts’ joint statement.

2.4.7 This will be followed by either the settlement or a court appearance. Sometimes the case is settled out of court at the very last minute, and the chartered surveyor will be expected to produce detailed, justifiable and reasonable costings immediately. If the matter goes to court, it is unlikely that it will take less than two or three days, and therefore the cost of this final session can amount to several thousands of pounds. It is at the conclusion of this stage that the final invoice (including the costs incurred in the interim period) can be raised.

2.4.8 The chartered surveyor should not expect any invoice to be settled quickly. It may take over 12 months to receive payment, whereas if the dispute can be settled amicably without entering court the invoice might be paid within a matter of weeks. It is inadvisable to view boundary dispute work as a revenue stream offering short-term rewards, or as an adjunct to the chartered surveyor’s normal surveying activities. Boundary disputes often require consistent long-term personal application, for which it may not be possible to collect fees until the matter is resolved or abandoned. For that reason it is recommended that anyone considering practising in this area should have sufficient cash flow to sustain both business and personal income, and should ensure that a lack of liquidity does not endanger the completion of client-instructed work.

2.4.9 RICS members should also refer to RICS practice statement and guidance note Surveyors acting as expert witnesses (2014).
3 Stage 2 – Research

3.1 Research and sources

Generally the chartered surveyor will be expected to begin the case assessment and prepare initial findings based on the documentary evidence provided. However, additional information may be needed that may take time to both identify and acquire. The chartered surveyor is often supplied with a large number of (sometimes poorly reproduced) documents (known as the ‘case bundle’, see the glossary in appendix G for more information). Time will be needed to examine these documents carefully and if necessary to obtain better quality copies. Normally this takes a few weeks and should be completed before the site visit takes place. The evidence will relate to questions such as:

- What is registered?
- Where was the original boundary feature?
- Has the position of the boundary feature changed?
- If so, how and when?

There are three classes of evidence:

- Land Registry – the registered title
- the title deeds – what was bought and sold
- extrinsic evidence – relating to what exists on the ground both now and historically.

3.2 The registered title

Compulsory registration of land started in central London in 1899. Other areas were progressively added until registration on sale (for consideration) across the whole of England and Wales became compulsory on 1 December 1990. Since then, triggers for registration have been extended to cover almost all situations where there is a change of ownership or creation of a first mortgage. However, about a fifth of the land mass of England and Wales was still unregistered in 2013.

Official copies of the land register and title plan can be obtained from Land Registry online (registered users may access the Land Registry portal: details of available services such as; searches of the Index Map, Register searches, value-added services etc., can be found at www.landregistry.gov.uk) or by post. An alternative source of information is the National Land Information Service (NLIS) (www.nlis.org.uk) which is a commercial provider of property search information. Plans obtained online are sometimes pixelated and liable to scaling error when printed by the user. Copies obtained by post directly from Land Registry are at the intended scale and easily copied.

Land Registry title plans usually show only general boundaries (see the glossary at appendix G). As a result it is not possible to identify the precise position of the legal boundary from the register and title plan. The title plan is based on the latest Ordnance Survey large scale topographic mapping at the point of first registration or in the case of historic information the title plan is based on the deeds supplied at registration. This mapping is of a defined accuracy, and therefore subject to the limitations of specification. Changes to the property may result in the title plan being re-issued based on more up-to-date mapping. The plan is based on the pre-registration deeds supplied at first registration. Land Registry will only commission a survey of the property when there is a problem in matching the deeds to the Ordnance Survey mapping. If the property and its extent are not fully defined by features on the map, Land Registry will plot any undefined boundaries using dotted lines. The mapping specialists in the senior casework team in the relevant District Land Registry office may be able to help. Older titles may only be held in paper format although most have now been scanned into a digital raster format, and newly created plans are held electronically in vector format.

3.3 Title deeds

Title deeds are the legal documents by which land is or was bought and sold: these may include conveyances, transfers, and indentures. The root of title is the deed that first created the plot of land, and the resulting boundaries are sometimes called the paper title. In theory the root of title can be identified for every plot, but in practice the old deeds have often been lost or destroyed. Remember that root of title must comply with section 44(1) of the Law of Property Act 1925. Registration of land aims to provide a complete definition of land, and so pre-registration deeds are often discarded or destroyed. However, (as discussed above) the register only records the general boundary,
and so the old deeds (if they exist) are very useful for the chartered surveyor trying to identify the precise boundary line.

Every conveyance contains a ‘Parcels Clause’ which describes the land. This may consist simply of a textual description, or there may be an attached plan. In some cases (for unregistered land) the text of the conveyance takes precedence over the plan, which is marked as being ‘for identification purposes only’. In others the land is ‘more particularly delineated’ and the plan is definitive. Sometimes the two phrases are combined and it is unclear as to whether the text or plan is definitive. Where the conveyance is vague or ambiguous a court will consider the conveyance as a whole, and may take surrounding circumstances into account. Generally it is best for the chartered surveyor to assist the parties and the court by giving an analysis of the plan at face value, and to avoid legal interpretation.

Since a boundary self-evidently separates two parcels of land in different ownership, it is important to try to obtain the deeds for both in order to give unbiased advice. This may be difficult since the deeds for unregistered land may be held by private individuals, solicitors, mortgage companies, landed estates, and estate surveyors who may be unwilling to provide copies. Copies are sometimes referred to in the register, and if they are noted as ‘copy filed’ or similar it should be possible to obtain them from the Land Registry via the Portal or NLIS, or by using form OC2 sent to the District Land Registry which administers that particular title (see www.landregistry.gov.uk/contact-us/offices). In fact all documentation, except ‘exempt documents’ (usually available documents with commercially sensitive information greyed out), held by Land Registry is open to public inspection. It can be obtained using form OC2 by making as full a description as possible of what is required, and Land Registry will supply all the information that it holds on file even if it is not referred to on the Register.

3.4 Extrinsic evidence

Given the limitations of property deeds and Land Registry title plans, the chartered surveyor may need to look at other sources of evidence to establish the precise boundary line and check whether this coincides with the current boundary features. In all cases the chartered surveyor should defer to the court as to the admissibility of evidence and the evidential weight to be given to it. Some of the main sources of evidence include:

- features on the ground
- Ordnance Survey mapping
- historical photography

3.4.1 Features on the ground

Close examination may show remnants of old hedges, walls, or fences which may be significant. Banks, ditches, roads, and streams should be recorded as there are a number of common law presumptions which may apply. Details of the construction of walls and fences may give clues as to ownership and/or the precise boundary line.

3.4.2 Ordnance Survey mapping

Ordnance Survey continuously updates the National Geographic Database (NGD) to bring it up-to-date for changes that occur in the natural and man-made environment. From the information contained in the source NGD it produces a range of both geospatial data products and paper mapping products. OS MasterMap® Topography Layer and OS MasterMap® Imagery Layer are both highly detailed topographic products, which provide valuable information in a boundary dispute case though it must be understood from the outset that Ordnance Survey maps show only physical topographic features and make no comment on land and property ownership boundaries or rights. OS MasterMap® Topography Layer contains data that has historically been surveyed at three ‘basic scales’:

- 1:1250° (urban)
- 1:2500° (rural) and
- 1:10 000° (mountain and moorland).

*with the associated accuracy referenced in Table 1

Ordnance Survey products are available both directly from Ordnance Survey and from its many partners. A description of Ordnance Survey’s remit and products can be found at www.ordnancesurvey.co.uk

Historic Ordnance Survey mapping dating back as far as the 18th century has extensive uses in boundary disputes. This mapping has been scanned and is available in digital raster format(s). Further information can be found at www.ordnancesurvey.co.uk/support/historical-maps.html

Historic mapping information may also be found at Legal Deposit Libraries, the British Library, the National Library of Scotland, the National Library of Wales, Cambridge University Library, the Bodleian (Oxford University) Library and the Library of Trinity College, Dublin (see www.legaldeposit.org.uk/index.html). The National Archives at Kew, London, the National Archives of Scotland, the Public Record Office of Northern Ireland and local public libraries and many landed estates also hold large amounts of historic mapping information.
Ordnance Survey mapping is subject to the limitations of its specification as is the case for any mapping. For reasons of cartographic clarity, features that are in close proximity on the ground are often generalised on the map. This varies with scale, for instance, when two linear features such as a wall, hedge or fence run approximately parallel they will be shown by a single line, representing the more significant feature, when they are closer than 1.0m (1:1250 scale), 2.0m (1:2500), or 5.0m (1:10 000). A hierarchical order of precedence governs which feature is shown, but preference is always given to the feature from which an administrative or electoral boundary is measured or which appears to define the physical extent of a property. The feature attribution can be queried to provide more information about a particular feature. Comprehensive product information including user guides and technical specifications are available at www.ordnancesurvey.co.uk/business-and-government/products/index.html

**Always remember that Ordnance Survey maps record physical features, not legal boundaries.**

Ordnance Survey and Land Registry have prepared a statement on their respective roles within boundary cases and the availability of relevant data. This explains that:

‘Ordnance Survey maps never show legal property boundaries, nor do they show ownership of physical features. Although some property boundaries may be coincident with surveyed map features, no assumptions should be made in these instances and consequently it is not possible to be sure of the position of a legal property boundary from an Ordnance Survey map.’

For links to some frequently asked questions see www.ordnancesurvey.co.uk/support/property-boundaries.html

Remember that all Ordnance Survey material appropriate to considering land and property boundaries and related matters is subject to Crown Copyright, be aware of this when using or copying Ordnance Survey information. Online information on Ordnance Survey licensing can be found at:

- www.ordnancesurvey.co.uk/business-and-government/licensing/crown-copyright.html
- www.ordnancesurvey.co.uk/business-and-government/licensing/index.html and
- www.ordnancesurvey.co.uk/business-and-government/licensing/licences/paper-map-copying.html

The online Ordnance Survey and RICS campaign to inform surveyors on licensing issues can be viewed at:

www.youtube.com/watch?v=azxBdRh1fEQ&list=PLJp4yCtYcXpoD6U-SmFeS48SOxEx-0u05s_index=3

Properly licensed and up-to-date Ordnance Survey mapping and data can be obtained from www.ordnancesurvey.co.uk/business-and-government/commercial/land-property/partners.html

### 3.4.3 Historical photography

Aerial photographs going back to World War II can be obtained from English Heritage Archive Services (www.english-heritage.org.uk/professional/archives-and-collections/nmr/archives/) and in Wales from the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) (www.rcahmw.gov.uk/hi/ENG/Heritage+of+Wales/Gallery/Aerial+Photography/) or from commercial sources.

Aerial photographs (particularly single frames) are difficult to use by non-specialists, but can still yield useful information about features on the ground and occupation at a particular date. Web-based mapping services may provide some historical (but mainly current) aerial photography, and terrestrial oblique images can sometimes be useful (although chartered surveyors should always make themselves aware of any copyright or use conditions before including what can seem to be ‘freely’ available information in expert reports).Snapshots taken in the past by the parties to the dispute can sometimes provide information about the detail of boundary features. The client may not realise that relevant and useful images can often be found be in family photo albums and archives. For example, the main subject of a photo might be family members, but where taken outside or in the garden property boundaries and features are often visible.

### 3.4.4 Other plans and documents

Planning applications are not legal documents, but they may contain architects’ plans, which may give an indication of boundary lines and features. Ecclesiastical Terriers, held by diocesan record offices, churches etc. may help with church glebe land. Enclosure Acts may contain relevant maps, and Tithe Maps from the 1840s are sometimes useful. In the 19th century land was acquired for the expanding railway network by authority of Acts of Parliament which required detailed mapping, and these are sometimes available. Other large public or charitable land owners such as the Ministry of Defence, Forestry Commission, National Trust, local authorities, Crown Estate, Natural England, Royal Society for the Protection of Birds (RSPB), religious institutions and Universities often have comprehensive land terriers. Where such land is unregistered, these may be particularly useful sources. Also note that a major programme of land registration of Church of England property including church yards, churches,
rectories and vicarages is in progress and nearing completion. A recent new focus on Chancel Tax liabilities has emerged in part due to this registration process which includes registration of such rights.

3.4.5 Witness statements

Generally it is for the court to assess factual evidence which will be tested in cross examination, but they may contain descriptions of a boundary at a particular date.

3.5 Accuracy

The quality of the evidence in any dispute determines the weight to be given to it. The better the quality, the greater the weight. In boundary demarcation, the relevant evidence relates to the position of the boundary, and its value and confidence in that value (quality) is quantified as an accuracy value, which is expressed numerically. Each feature (point, line or area) on a plan has an associated accuracy. This may vary locally between different features as well as between areas mapped at different specifications. For instance, buildings (being well-defined features) are likely to be surveyed more accurately than hedges, which are neither solid nor well-defined. A chartered surveyor should assess the accuracy of all the available positional evidence. In some cases it will become apparent that the evidence is simply not good enough to resolve the dispute at least not to the level of expectation of some of the parties. For instance, if only Ordnance Survey mapping is available, the accuracy is not likely to be sufficient to resolve a dispute over a few centimetres. In these cases there may be residual uncertainty in the answer and the dispute can only be resolved by agreement, either between the parties or imposed by an order or judgment from the court.

Ordnance Survey, in common with many mapping authorities around the world, defines accuracy in three ways: absolute accuracy, relative accuracy, and geometric fidelity (see below). Of these, relative accuracy is usually the most relevant to boundary disputes (see appendix G Glossary and essential terms, a full explanation of accuracy issues can also be found in the RICS Geomatics client guide Reassuringly accurate).

**Absolute accuracy** – a measure that indicates how closely the coordinates of a feature in Ordnance Survey map data agree with the true National Grid coordinates of the same feature on the ground.

**Relative accuracy** – a measure that compares the precise distance between features measured in the real world to the distance between the equivalent features in Ordnance Survey map data.

![Figure 1: Absolute accuracy vs relative accuracy](Ordnance Survey © Crown copyright 2013)

**Geometric fidelity** – ensures that features in the Ordnance Survey map data match the shapes and alignments of the real-world objects they represent. For example, features that are rectangular on the ground should be represented as rectangular in the data and fences that are parallel, co-linear or perpendicular to other features in the real world should be the same in the data.

The following table, based on more than 40 years of accuracy testing, represents the absolute and relative accuracy of Ordnance Survey large scale topographic mapping data:

<table>
<thead>
<tr>
<th>Original survey scale</th>
<th>99% confidence level*</th>
<th>95% confidence level*</th>
<th>RMSE**</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1:1250</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute accuracy</td>
<td>0.9m</td>
<td>0.8m</td>
<td>0.5m</td>
</tr>
<tr>
<td>Relative accuracy</td>
<td>+/- 1.1m (up to 60 m)</td>
<td>+/- 0.9m (up to 60 m)</td>
<td>+/- 0.5m (up to 60m)</td>
</tr>
<tr>
<td><strong>1:2500</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute accuracy</td>
<td>2.4m</td>
<td>1.9m</td>
<td>1.1m</td>
</tr>
<tr>
<td>Relative accuracy</td>
<td>+/- 2.5m (up to 100 m)</td>
<td>+/- 1.9m (up to 100 m)</td>
<td>+/- 1.0m (up to 100m)</td>
</tr>
<tr>
<td><strong>1:10 000</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absolute accuracy</td>
<td>8.8m</td>
<td>7.1m</td>
<td>4.1m</td>
</tr>
<tr>
<td>Relative accuracy</td>
<td>+/- 10.1m (up to 500m)</td>
<td>+/- 7.7m (up to 500 m)</td>
<td>+/- 4.0m (up to 500m)</td>
</tr>
</tbody>
</table>

Table 1: Ordnance Survey mapping accuracies of large scale topographic mapping data
Confidence level is how frequently a parameter falls within the quoted limits.

RMSE (root mean square error) is the square root of the mean of the squares of the errors between the observations.

Ordnance Survey © Crown copyright 2013

Source: www.ordnancesurvey.co.uk/support/products-services.html

As the table shows, accuracy is related to scale. Older map series such as the Ordnance Survey County Series 1:2500 maps from the late 19th century onwards may not achieve the accuracy levels stated above. Scale also determines the degree of generalisation of features on a map. For the typically small areas involved in boundary disputes the local accuracy may be better than the national figures, and it is important for the chartered surveyor (where possible) to quantify this. This is usually achieved by the observation of points which are common to the map and to the real-world. The observed coordinates are compared with their equivalent map coordinates, typically using a least squares analysis method for bi-variate (eastings and northings) data, to produce an accuracy value.

Other evidence: as with Ordnance Survey mapping data, it is important to assess and if possible quantify the accuracy of the evidence. Old conveyance plans may be carefully drawn with dimensions, tracings of old Ordnance Survey maps, or simple diagrams. Even diagrams may yield useful geometric information. Modern techniques such as digitising (electronic tracing) can to calculate the scale of a plan and its accuracy relative to the site survey, and may take out some of the distortions arising from repeated copying. Specialist aerial photogrammetry companies can obtain very accurate measurements from deliberately overlapping pairs of aerial images, known as stereo images. Non-specialist surveyors can obtain useful information from single image frames, although they need to be aware of the distortions inherent in the perspective view — these will constrain the accuracy of measurement that can be achieved. If the chartered surveyor wishes to take measurements from a single image it is best that he/she obtain an ortho-rectified image that has had the distortions cause by terrain and the laws of perspective removed. An ortho-rectified image is in reality a fusion of several different images together to form a new image file. An informed cross-examiner could try and argue that they are not fit for purpose as a result of the inherent manipulation of the pixels into their true map position, which is a necessary part of the process. A well-informed chartered surveyor should be able to articulate a robust defence against such an argument. In general, chartered surveyors need to get a ‘feel’ for how good the evidence is, and need to be able to explain this in simple, non-technical terms. Their comments will be invaluable to the parties and to the court as they seek to determine how much weight to give to each piece of evidence.

3.6 Analysis

In general terms it is the job of the chartered surveyor to assist the parties to a dispute and the court by transferring (usually by overlaying) the evidence (from whatever source) onto a new survey of the site, providing an assessment of its quality, and commenting on the results. Alternative scenarios should be plotted and their relative strengths and weaknesses discussed. In some cases it is useful to identify the source of a plan, for instance, when repeated ‘edging’ (e.g. marking the boundary features with a thick pen) of a plot and successive photocopying have obliterated the underlying information. Methods may include:

- enlarging/reducing plans to a common scale
- overlaying data and images digitally in a GIS or CAD system or visually on a light table
- digitising (electronically trace) plans onto the survey
- constructing lines graphically or digitally from dimensions and calculate areas
- instructing a specialist (such as a photogrammetrist) to do specific technical work

Experience shows that thorough and careful research and analysis, which identifies the alternatives and clarifies the issues, can be an important step towards compromise and settlement. Chartered surveyors should always remember that they are there to present the evidence to the parties and to the court, not to decide the outcome.
4 Stage 3 – The site visit, measured survey and digital photography

In all but the most simple boundary cases it is likely to be necessary to carry out a measured land survey. It is usually advantageous to make a separate reconnaissance visit to the site before carrying out the actual measured survey, for example, to take photographs (preferably digital) of all the boundary features and to plan in exact detail the measured survey. If there is any risk of boundary features being disturbed, relocated or destroyed (e.g. by agricultural activity, site clearance, development or vexatious act), a preliminary photographic survey at the earliest opportunity can prove invaluable.

4.1 Collecting photographic evidence

Site photographs may include scale-aids (an object of known dimension such as a survey staff or tape measure), which will help with the appreciation of boundary and related feature details at a later stage, particularly if matters proceed to court. Photographs may be required for inclusion in the final report. Digital photographs can be stored on appropriate media and a copy of this bound with the final report. Boundaries and their associated features can often be in poorly illuminated or overgrown areas, and adequate lighting should be considered. Using a digital camera can help and this should be appropriate for the task at hand. Also consider digital photograph file sizes and their inclusion in documentation. Photographs should be high resolution where possible and stored at the capture resolution as part of the evidence base. De-resolved versions of the originals can be created, using appropriate software, for inclusion in the report where the management of the file sizes of embedded content is required. It is important that thought is given to verification of digital imagery. It is recommended that a detailed log of each photograph, its location and direction is maintained.

Comprehensive (total coverage, ideally overlapping) photography of the survey area can help to ensure that a return to site is not necessary, and to ensure that a comprehensive selection is available for editing into a final report. Photographs taken from both inside and outside the site that show the general surrounds and relationship of neighbouring features are useful. It is also worth considering whether a short video is appropriate, depending on the nature of the boundary; this may include witness testimony from the parties or appropriate neighbours.

4.2 The boundary survey

RICS members should make themselves fully conversant with RICS guidance and professional information relating to measured surveys and continue to follow best practice contemporary field survey techniques. A list of relevant titles can be found in appendix A.

The primary function of a boundary survey is to show the ‘relative’ spatial relationships between relevant ground features. It is this ‘relative’ accuracy that is crucial (for example, the distance between one fence post and the next, or from a conservatory wall to the boundary wall).

Depending on circumstances and requirements, the boundary survey could result in a variety of different outputs, ranging from a simple ‘sketch-map’ to a fully dimensioned and accurate measured survey that can be overlaid onto old plans or against which the dimensions found in deeds and on deed plans can be tested.

Boundary surveys should pay particular attention to the actual boundary feature(s). For example, in the case of a post and wire fence, they should show individual posts, record their shape and size and record the number of strands of wire, the estimated age of the wire, the side of the post to which the wire is attached and any other comment that may be relevant. Small details such as these can affect the outcome of a case. The reason for recording such detail is that there may be in-depth cross-questioning in the courtroom concerning the age and nature of a fence or wall, its similarity to other fences or walls in the locality, the wire arrangement used around other parts of the property and consideration of whether any fence posts have been replaced subsequent to the original fence erection.

RICS guidance note, England and Wales
Notify your client, professional adviser/solicitor and the other party to the boundary dispute of the proposed date of the measured survey. This will avoid confusion for all parties concerned and may lessen the chance of aggravation. Avoid expressing any opinion, professional or otherwise, while carrying out the measured survey. If access to the neighbouring property is essential, a letter of authorisation from the client may be helpful and access should be arranged in advance. The chartered surveyor should stress that the purpose of the survey is to provide an unbiased objective opinion on the boundary, and surveying both properties together will save time and money for both parties. Any control points or survey marks should be shown to the neighbour(s) since they might present a health and safety hazard and parties might object to placing anything on their property. The access should be discussed with the client’s legal adviser since there might be legal implications.

4.2.1 ‘Sketch-map’ or diagrammatic survey

Some boundary situations do not warrant a full (and costly) measured survey. A sketch-map survey may suffice. This will usually be of a diagrammatic nature. It can be prepared with simple and inexpensive equipment, such as a tape measure (typically 20m or 30m long) and/or hand-held laser electronic distance-measuring equipment, ranging rods and double prism optical squares. When using electronic distance-measuring equipment, check measurements should be taken first to enable any measurement errors to be identified. The sketch-map survey should relate significant features to each other with important dimensions written on the map. It may also be necessary to orientate or relate the sketch-map to some distant object (e.g. a railway bridge, pylon, gateway), and it is often sufficient to draw an arrow pointing in the direction of that feature together with a thumbnail sketch and text such as ‘138 metres to nearest pylon leg’. With title plans and boundary surveys, the relationship of external physical features and objects can be crucial in contextualising the plan.

If the chartered surveyor has any doubts about the reliability of such a sketch-map, he/she should add the words ‘Not to scale – Do not scale measurements from this plan’. It is very important to be fully aware of the inherent issues regarding scale. Please see the RICS client guide Scale: Avoid tripping up over step changes in scale. A sketch-map will be inadequate if the intention is either to produce a determined boundary application or produce a plan from which other measurements can be taken.

4.2.2 Measured survey

If the chartered surveyor is to be subject to detailed cross-examination in court at a later date it is advisable to carry out a measured land survey, as this will provide more robust and defensible evidence. As it is a precise metric survey it will allow new measurements to be reliably taken from the data (or plan) and for spatial relationships to be examined, providing that all of the relevant features were captured at the time of survey. As a minimum the measured survey should include all boundary features, buildings and adjacent kerb lines. It should also include any other features that either appear on the Ordnance Survey plans or data (as this will aid cross-comparison) or are relevant to the problem, for example, trees, changes to surface type, above-ground height and composition of boundary feature, etc.

It is essential to measure the features outside the actual area of dispute as they may help in interpreting neighbouring conveyance plans and help contextualise the final survey and other spatial information. Remember that this is where an initial survey specification can prove crucial, as a guide to best practice and as a checklist of features to be included. RICS members should refer to the quick reference specification sheet for topographical and measured building surveys (see appendix I). It is important to remember that electronically generated data can cause its own issues when it comes to processing and presenting it back at the office. It is important to take good field survey notes and sketches to aid later interpretation.

A measured survey is carried out using precise surveying equipment that can measure and fix position, linear dimensions and shape. This may be achieved using equipment that measures angles and distances, such as an electronic theodolite/total station. Increasing use is being made of equipment that utilises a ‘reflectorless’ electronic measuring device. This means that the observer can measure features without the need of an assistant to ‘occupy’ these with a ranging pole and reflector. This is particularly useful for boundary surveys, where access to certain features is either dangerous or perhaps impossible.

An alternative method that can be used for measured survey is direct observation of features using Global Positioning System (GPS) or Global Navigation Satellite System (GNSS) technology. In Great Britain a Real Time Kinematic (RTK) GNSS network has been established by Ordnance Survey. It is known as OS Net® and is accessible through its commercial partners. This service allows surveyors using GNSS receivers to achieve absolute accuracies of +/- 10-20mm in plan and +/- 20-30mm in height.
With this method the distances between features on the ground are deduced from the coordinate differences rather than measured directly. However, the use of GNSS is not appropriate in all instances, and RICS members should be aware of the need for appropriate training and expertise in the use of GNSS equipment.

GNSS best practice and advice is available in the RICS guidance note Guidelines for the use of GNSS in land surveying and mapping (2010) and the client guide Virtually right? – Networked GPS: A useful guide from RICS on aspects of cost effective networked GPS correction services.

More information on OS Net® the Ordnance Survey RTK GNSS network can be obtained from www.ordnancesurvey.co.uk/oswebsite/products/os-net/index.html

A further survey method that may prove very useful in certain circumstances is photogrammetry, for example, where there is a requirement to establish the position of features that have disappeared, or there is a need to re-establish the topography at a particular point in time. Photogrammetry is useful for mapping wider areas, where there are site access issues such as health and safety, or where a more synoptic view is required. If suitable aerial photography, either recent or historic, can be sourced, it is often possible to accurately re-plot the visible features sometimes even in cases where the features have since disappeared on the ground. Such work is best undertaken by organisations specialising in photogrammetry, as a high degree of skill and experience as well as specialist equipment is required. Historically it has been very expensive to task commissioned aerial imaging of a site making it mostly unaffordable for private client work. The image acquisition had to be carried out by specialist aerial survey companies who have made the high capital investment in survey quality aerial cameras and usually a fixed wing aeroplane. The advent of Unmanned Aerial Vehicles (UAVs) is changing the economics of participation and it is now cost-effective to collect imagery using relatively inexpensive equipment and for that imagery to be available for use the same day, in some cases before even leaving the site.

This guidance note is not intended to deal with survey practice. For more information on field survey techniques, refer to the publications listed in appendix A. RICS members should also refer to the RICS guidance note Measured surveys of land, buildings and utilities (2014). The survey accuracy banding table from the above guidance is reproduced in appendix H and allows surveyors and clients to quickly establish what accuracy and subsequent scale can be achieved from a measured survey.

### Table 2: Typical survey accuracies achievable for different boundary features

<table>
<thead>
<tr>
<th>Topographic feature</th>
<th>Average width of feature (mm)</th>
<th>Potential survey accuracy (+/-mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brick or block wall</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>Cut stone wall</td>
<td>250–500</td>
<td>30–50</td>
</tr>
<tr>
<td>Dry stone wall (uncut)</td>
<td>500–1500</td>
<td>50–200</td>
</tr>
<tr>
<td>Retaining walls (earthworks, gabions)</td>
<td>1000–2500</td>
<td>100–250</td>
</tr>
<tr>
<td>Railings</td>
<td></td>
<td>5–10</td>
</tr>
<tr>
<td>Fence (post and wire, concrete/wood panel, picket)</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>Fence (agricultural)</td>
<td>200</td>
<td>20</td>
</tr>
<tr>
<td>Watercourses, banks, sidings, Ditches</td>
<td>3000</td>
<td>200–300</td>
</tr>
</tbody>
</table>

4.2.3 Selecting suitable survey and output scales for the boundary survey

There are several ‘rules of thumb’ that can be used to establish the appropriate output scale of a survey:

Note that it is impossible to improve the accuracy of the source data once it has been captured. Before embarking on the survey the chartered surveyor needs to understand what is the largest scale at which the data are going to be used, as this will determine the capture accuracy*.

Measured survey data captured should be as accurate* as the dispute and specification requires; there may be a future need to ‘scale up’ or ‘scale down’ survey plans for clarity or at the request of the court.

Always carry out a field survey to an accuracy that is at least one order of magnitude (x10) greater than the original Ordnance Survey data and Land Registry title plan information.

Boundary disputes tend to be overwhelmingly paper-based (hard copy), particularly the historical evidence, and familiarity with plotting tolerances, representation at particular scales, and the limitations of both are important.

*Horizontal and vertical survey accuracies can be found in the survey accuracy banding table in appendix H.

1:100 may seem to be a large scale, but it is very useful for discerning and showing deviations from an alignment such as kinks and bulges in fence lines. It also enables the chartered surveyor to add intricate details of fence posts and their junctions. This is the scale that can be used to zoom-in on the problem area and illustrate to the client and the court a particular issue/problem that it may not be possible to observe at smaller scales such as 1:500 and 1:1250.
1:500 is a useful scale for presenting an overview plan that can be easily used during a desktop discussion. Many boundary disputes involve an area of land that will fit onto a 1:500 plan at A3 size. In a court room it is rare for the judge to have a large enough space available on which to spread out other large plans, and a 1:500 scale plan is useful in this respect. This scale of plan can be referred to on a regular basis by the court, due to its ease of use. By using this scale it is easier for all involved to refer to the more detailed larger-scale 1:100 plan or less detailed 1:1250 or 1:2500 or 1:10 000 plan and still retain a clear picture of the overall context. It is also easier to work with this size of plan within the limited confines of a witness stand.

1:1250, 1:2500 and 1:10 000 – at various stages of the research, analysis and/or litigation, the Ordnance Survey data or maps of the area at one of these scales will be constantly referenced (see Table 1 in section 3.5 for nominal survey scales that apply to Ordnance Survey large-scale topographic mapping data according to geography). It is important, therefore, to include an extract from the Ordnance Survey map in the final report. It is often useful to reproduce the boundary survey at the same scale as the Ordnance Survey map, and superimpose one over the other, thus showing the degree of agreement with the key features. Land Registry title plans are based on extracts from Ordnance Survey data/maps originating at these same source scales. Land Registry title plans can form a significant part of discussions and should be obtained as early as possible.

On completion of the boundary survey the field measurements are usually transferred to a computer for post processing, editing, presentation and plotting at suitable scales. Experience has shown that the following plot scales are particularly useful:

- 1:100 or 1:200 for detailed analysis
- 1:500 for court presentation
- 1:1250 and/or 1:2500 and/or 1:10 000 for comparison with Ordnance Survey information.

This selection of scales is based on the experience of the B&PWWG, and may not be applicable in all situations. In all cases the scale should be appropriate to the circumstances and based on the features on the ground that will need to be surveyed and graphically represented. It is important to understand that just because a map or plan may be plotted at a large (detailed) scale, e.g. 1:100, it does not necessarily follow that reliable centimetric level measurements can be scaled from it. For example, the map or plan may have been enlarged from a smaller (less detailed) scale. Therefore, it is essential to know the accuracy and precision of the underlying data capture process as this is what determines the reliability of the measurements that can be taken from the data or any hard copy plot produced from them.

**Units of measurement:** In some cases, such as when dealing with old deeds, it may be appropriate to place imperial measurements in brackets after metric units. When in court (or at pre-trial meetings) a useful skill is to begin ‘thinking imperial’, as many people involved will be able to picture six inches, whereas fewer people will be able to mentally picture 0.150m, or 15cm or 1.5 decimetres. The same comment applies to units of area measurement such as hectares and acres.

**Citation of scale:** If a comparison is being made with old deed plans containing imperial measurements, provide a common basis of measurement. Difficulties may arise with old imperial scale plans (e.g. 1/4" to 1 foot (1:48)) that do not correspond to modern standard scales. It is best practice to include the conversion factor that you have used between metric and imperial for both linear and area measurements.

**Calibration of instrumentation:** Make sure that any survey instruments used, including ancillary field survey instrumentation such as tape measures, optical squares and level staffs, are reliable. The professional onus is on the chartered surveyor to ensure that calibration and/or checking certificates are up-to-date for all instruments used during a boundary survey. For more information on calibration, see the RICS guidance note EDM Calibration (2007) and the Reassuringly accurate client guide.

### 4.3 Instructing other specialist chartered surveyors

If you are in doubt or believe that execution of the boundary survey may be beyond your competence and experience, then it may be appropriate to call in an expert chartered land surveyor or chartered land surveying company. When using external specialist land survey companies, it is vital that the contractual arrangements between the instructed chartered surveyor and the chartered land survey company are robust, and mirror the terms of engagement of the instructed chartered surveyor. Where the matter is likely to result in evidence being presented to a court it is essential that the measured survey is supervised by the instructed chartered surveyor or a qualified assistant, and that the agreed measured survey specification is fully adhered to.

In other circumstances it may be possible to give detailed instructions, in which case the initial specification of any survey is critical and special attention should be paid to actual deliverables (see the quick reference specification sheet for topographical and measured building surveys in appendix I).
agreement is subsequently reached, an application to ‘determine’ the boundary might be made to Land Registry. The instructed chartered surveyor should be conversant with Land Registry requirements (see Land Registry resources in appendix A). Land Registry sets specific requirements for measured surveys that are to be lodged with a determined boundary application. These should be considered at the initial stage and should inform the survey specification from the outset. Failure to comply will result in the application being returned.

4.4 Airspace and substrata

English land law is based on the concept of interests or estates in land. Therefore, it is possible (and common in commercial property) for a property to be split into multiple interests. It is a known commercial practice when subdividing a property to reserve the control of airspace and substrata space. This controls future development by owner interests and allows the reserving party to claim air rights for such things as scaffolding or tower crane access.

Chartered surveyors involved in defining airspace and substrata boundaries should ensure that they are involved in prior discussions with other professionals and the owner/developer of the relevant property/project, in order that they become sufficiently familiar with the intended outcomes, including the division of interests and subsequent uses of same. The chartered surveyor should advise in relation to the determination of the boundary between the subject property building and the substrata and between the subject property and the airspace above, respectively. While the extent of the property to be defined is ultimately a matter for the property owner(s) concerned, a pragmatic approach is advisable. It is therefore reasonable that, in as far as possible, a boundary line at uniform level below the lowest part of the foundation formation level, is determined between the substrata and the property. This should allow for a possible marginal difference between the design drawing and the ‘as built’ position of the foundations and for variations in the levels of the foundation formation. A substrata boundary 0.2m or 0.3m below the lowest part of the design formation level of the foundation may be reasonable. It is also reasonable, in as far as possible, that a boundary line at uniform level is determined marginally above the highest point of the roof or top of the subject property. Consider the nature of the roof and access required for servicing and general maintenance, including the replacing of service utilities, when deciding on the boundary with the airspace above. The vertical limits of airspace and substrata should be defined by a relevant height datum.

Where a building is supported on piles and pile caps the situation is significantly more complex and has additional liability implications. In such instances the chartered surveyor should obtain the most up-to-date drawings available, examine the nature, dimensions and distribution of the pile support structure and familiarise themselves with the entire spatial arrangement of the building’s substrata. During discussions with the owner/developer and their legal advisers and structural engineer, the chartered surveyor will then be in a position to advise in relation to the substrata arrangement. However, it may not be feasible to separate the title in the substrata from the title in the building. The chartered surveyor will be in a position to advise if the perimeter boundary as determined at ground floor level should apply to the substrata or if it is necessary to define a different boundary to vertically delimit the building substructure that contains the pile/ pile cap structure. The ultimate decision is a matter for the owner/developer and is usually based on the advice of the legal and technical professionals.

The control of substrata boundaries is becoming an issue in the urban environment. Tunnel projects such as underground railways may exist and have legal rights to land below a site. The viability of a site to facilitate major redevelopment that requires deep basement and substructure works such as piling can be restricted or prevented by the rights of the substrata interests.

The definition of the interest holding the substrata rights can also affect the ability of an owner to claim compensation from utilities undertaking tunnel works. Therefore, the accurate recording and registering of current and future rights is a factor that a chartered surveyor should discuss with a client at instruction to ensure that this potentially time-consuming task is not omitted in cases where it is required.

4.5 Horizontal party structures

The Party Wall Act 1996 provides the legal basis for a vertical structure (usually walls) being held in joint ownership. This is common in flat and office developments. The practice of recording these boundaries and whether party or sole ownership is being created is currently an area of weak recording, often leading to needless disputes and confusion during refurbishment and fit-out projects.

Chartered surveyors are strongly encouraged to explain to developer clients the need to clearly define and record the subdivision boundaries in the horizontal context and to the same care and accuracy in the vertical context. Chartered surveyors should also refer to the RICS guidance note Party walls (2011).
5  Stage 4 – The report

5.1  Analysis and preparation

The nature and complexity of the report will depend on the issues under consideration and its purpose. It could simply consist of a sketch plan and an explanatory letter or memorandum. The written text and accompanying plan should accurately cross-reference each other in terms of colours, scales, notations and so on. Consistency is paramount. Inconsistency of presentation is a weakness that is often exploited in cross-examination to undermine the credibility of the expert witness.

In contentious cases, the report is the document that will be passed around all the legal professionals involved in the dispute, and will be scrutinised by the presiding judge in court. It should be of a very high quality, not only in its content but also in the way it is presented. The chartered surveyor should be aware at the time of preparing the initial report that each fact referred to, and every opinion expressed, will be susceptible to cross-examination by counsel acting for the other party. The professionalism of the chartered surveyor will be judged on the quality of and reaction to the final report, so great care should be taken in its preparation.

The chartered surveyor should be able to support any assumptions, opinions or facts by direct reference to analysis, expertise or published/learned documentation such as RICS practice statements and guidance notes. Fact and opinion should be clearly differentiated in the report. Any contentious statement is likely to be challenged.

Each chartered surveyor will in time develop their own style of presentation and compilation, but the following generic sub-headings are suggested for the drafting of any boundary report:

- executive summary
- instructions (explain the problem)
- background and issues (a concise clear history of the matter)
- site investigation, methodology and findings of fact (how the survey was carried out)
- analysis (your investigation)
- conclusion (your opinion)

- an appendix of ancillary documents such as deed and plans contained in poly pockets (clear plastic document holders) and in the same orientation as each other. (This allows them to be removed and viewed separate to the report. They must be cross-referenced to the main body of the report.)
- an appendix of colour photographs or digital imagery correctly labelled
- an appendix listing qualifications and experience of the chartered surveyor (a ‘mini-CV’).

For expert reports to be used in court proceedings, the standards of Civil Procedure Rule (CPR) Part 35 should to be followed. This, and the associated Practice Directions 35, can be accessed at www.justice.gov.uk/civil/procules_fin/contents/parts/part35.htm

It is imperative that the chartered surveyor refers to RICS practice statement and guidance note, Surveyors acting as expert witnesses (2014).

One of the most important aspects of the final report is the analysis. As with the rest of the final report, this section should be well written and logical. Your opinion should arise out of the findings in fact and it should be clear to the reader that this is the case. It may help to describe how you have examined all of the available documentation, maps and plans (appendix D), how the measured survey has highlighted the current boundary position, and how the original boundary demarcation and detail have been transferred onto the present-day dispute situation.

It can be useful to demonstrate in the final report exactly how one plan should be overlaid onto another. For that reason, it may be useful to add registration marks (similar to fiducial marks on photographs) as an aid to those who are not familiar with grids and other such surveying terminology. Photographs should be numbered clearly and uniquely. Any reference to the photographs should always be accompanied by a reference to its number.

Do not assume anything. For example, a client or a barrister may not realise that ‘OS’ is sometimes used as an abbreviation of Ordnance Survey. It is advisable to write any such name in full on the first occasion (together with its abbreviation), and then refer to it by
its abbreviation only from then on. Alternatively, include a list of defined terms and abbreviations in an appendix.

The key aspect of a boundary report is that it should explain and guide the non-domain expert (or another non-surveying professional) in a way that will illuminate the analysis of the dispute without being patronising but still retain the key technical facts that form the basis and logic of the analysis. Avoid technical and mathematical jargon. If it does need to be used, an explanation of terms in an appendix may be helpful to the reader.

The conclusion of the report allows you to summarise the research and the analysis and to arrive at an expert opinion. The body of the report will outline your findings, while the conclusion will interpret those findings and concur (or not) with the client’s claim or defence. It is worth emphasising that this is purely your expert and professional opinion. Refrain from expressing or developing any ‘emotional’ attachment to a dispute or expressing any such feelings in court.

If you hold some opinion on the morality of the case or feel strongly about a non-technical issue, then you should discuss this with the acting solicitor who may find such information of relevance to the case.

Expert witnesses in court proceedings owe a primary duty to the court to assist it in its deliberations. The court will demand total candour, including an explanation of those areas where the evidence may not support the instructing party’s case. The role and function of the expert in giving evidence to a court needs to be explained to clients and their other advisers from the very outset. If, in your opinion, the facts do not support your client’s case, it makes sense to discuss this with them at the earliest opportunity. They may wish to reconsider their position or obtain a second opinion. The aspect above is important, and if not adhered to could lead to difficulties later.

The report itself should be presented in a folder or wallet with the pages secured. If there are any maps or plans that cannot be folded and inserted into the report, they should be clearly referred to in the index. It is very important that parts of the report do not become separated, as this could lead to one of the parties claiming that they have not been shown the full details.

It is usual for the solicitor acting for each client to exchange reports before a court appearance (sometimes months or even years before the appearance). You should impress on the solicitor that the reports should be exchanged in as near to a simultaneous manner as possible. It is important to maintain a strong element of objectivity when completing a boundary dispute report, and not to be influenced by the findings of the other party, even if their solicitor has sent a report through earlier than expected. It is important to remember that surveys produced in court should be agreed by both sides, and if not agreed, then reasons why should be stated. This is about the veracity of the survey i.e. does it represent the facts as they are on the ground not whether the parties agree about the conclusions that may be drawn from the survey.

### 5.2 Presentation of the report

Less extensive/detailed reports are commonly contained in a letter, or bound together to help keep the pages in order. The report should be accompanied in all cases by an invitation to the client, adviser or solicitor to convene a meeting or telephone/video conference call to discuss matters. Electronic/soft copy submission of reports is often very helpful for clients located overseas, but plans and drawings should be covered by a caveat that they may not be true to scale when viewed on screen or when printed out. Using a platform independent file format such as Adobe Portable Document Format (PDF) documents can assist in ensuring the document displays and prints as intended. There is an extension format known as GeoPDF that can be used to present spatial information. Pan, zoom and layering functionality are embedded into the document, which allows the recipient interactivity with the map (spatial data) without the need for application software.

With regards to presentation and delivery (Stage 4), consider the number of copies required and to the format in which it is produced. Many reports are produced digitally, but in these cases it is wise to ‘write-protect’ the document so that it cannot be amended other than by its author. In court proceedings it is usually necessary to compile five identical paper copies of this report, one to be retained by the chartered surveyor and the others to be handed to the client, professional adviser or solicitor for examination and circulation.

For court-related work a report should be output in paper format in addition to any electronic format. Judges are increasingly using information technologies and can be reluctant to read through large volumes of paper, although having a paper copy for actual fine scrutiny remains indispensable. It also means the report always remains accessible even in the event of technology failure.

The report can be sent to the solicitor (or the client, if there is no solicitor or other professional adviser involved) approximately one week before a meeting of the client and their instructed parties. It is often helpful at that meeting to go slowly through the full report,
answering queries throughout. It can also be useful to supply additional looseleaf copies of key plans and photographs that can be compared, orientated and annotated at the meeting.

Any amendments should be agreed at this stage and will normally only apply to presentation items such as grammar and layout. This meeting can involve considerable pressure from the client on the chartered surveyor to leave out items that may be unfavourable to the client’s case. Facts that are removed or concealed, however, are invariably exposed under cross-examination, to the disadvantage of the client’s case and the detriment of the chartered surveyor’s professional standing.

At the meeting, an opinion of the strength of the case can be given to the solicitor and/or client. This opinion would normally fall into one of the following categories.

For general boundary reports:
- the level of correlation between plans and what is on the ground
- encroachments and other vulnerabilities and
- accuracy of information and its possible implications.

For contentious cases, the chartered surveyor should identify the key elements that are ascertainable from his/hers own inspection and investigations. He/she may offer an opinion on aspects such as the likely age of structures or whether changes have occurred and may also be asked to assess the strengths and weaknesses of a technical case, but should avoid attempting to second guess the outcomes of legal proceedings.

Bitter recrimination (and possibly litigation against instructed parties) often follows unsuccessful boundary dispute litigation. Remember that you are there to report on technical evidence only and whether that evidence supports the case.

Whatever the perceived strength of the case, it can be worth encouraging the client to try and seek settlement of the dispute out of court. This is something that the solicitor should advise the client on. Since the reforms advocated by Lord Woolf, the Civil Procedure Rules (CPR) (see appendix A) make it virtually mandatory to consider a settlement other than via the court.

However, do not be surprised if the client wishes to proceed with a court appearance even after you have advised that there is absolutely no possibility of the case being successful. As a chartered surveyor, you or the professional adviser/solicitor should make clear that the client fully understands the significant penalties that could be attached to proceeding unwisely or frivolously.

Clients can become obsessed with not ‘losing face’, and will want to try to recover the accrued costs. Clients should be discouraged from such a stance, though this is principally the role of the legal adviser. Because litigants can finish up with costs awarded against them, it is advisable in these circumstances to make certain that payment of outstanding fees is made, or that a suitable sum to cover them is deposited with the solicitor. Chartered surveyors should take note of the Civil Justice Council’s Protocol for the Instruction of Experts to give Evidence in Civil Claims, available at www.justice.gov.uk/courts/procedure-rules/civil/contents/form_section_images/practice_directions/pd35_pdf_eps/pd35_prot.pdf which states at paragraph 7.6:

‘Payments contingent upon the nature of the expert evidence given in legal proceedings, or upon the outcome of a case, must never be offered or accepted. To do so would contravene experts’ overriding duty to the court and compromise their duty of independence.’

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There is no such scenario as ‘no win no fee’ in expert witness cases.
6 Stage 5 – Alternative Dispute Resolution

6.1 DRS Neighbour Disputes Service

RICS operates a service where it will appoint a suitably qualified chartered surveyor who has undertaken specific training that leads to inclusion on the Neighbour Disputes Service register to advise the general public and/or professional advisers in respect of boundary issues. This training will include the practice and procedure of the Neighbour Disputes Service, and competence in the production of expert reports that comply with the Civil Procedure Rules (CPR) and their relationship to associated RICS practice statements and guidance notes.

For more information on the Neighbour Disputes Service training see www.rics.org/uk/join/member-accreditations-list/dispute-resolution-service/

Members interested in joining the scheme can download the DR12 Neighbour Disputes Specialist application form.

To initiate the service, one or more of the disputing parties may apply to RICS Dispute Resolution Service on a Neighbour Disputes application form.

The Neighbour Disputes Service is designed to resolve boundary and other neighbour disputes in order to reduce costs and where possible, avoid the need for trial. Where court proceedings are unavoidable, Neighbour Disputes Service is designed to assist the court in coming to a prompt and informed decision, with the aim of limiting costs by avoiding prolonged litigation and the potential for escalation to higher courts.

6.2 Mediation

Mediation as a form of ADR requires specific training. RICS provides opportunities for mediation training to members; further information is available from www.rics.org/uk/join/member-accreditations-list/dispute-resolution-service/mediation/ It may also be possible, depending on the issues, to use more informal forms of mediation.

If you are being instructed to act as a mediator, it is essential that this role be established during initial client instructions, as this will have a fundamental bearing on how the case proceeds. The aim of mediation is to limit or eliminate matters in contention, and to reduce conflict and tension. This role requires considerable tact and diplomacy to help bring opposing parties together to resolve a boundary problem without recourse to litigation. Note that the results of mediation do not become legally binding until the signing of a formal agreement between the parties.

The chartered surveyor acting as a mediator, either informally or formally, should be able to explain, objectively and impartially, the boundary situation to all parties in a dispute, especially in the absence of legal representatives. The chartered surveyor should be seen as an independent source of knowledge with the skills and behaviours to assist the parties to reach a mutually satisfactory resolution.

Mediation can often involve highly emotive situations, and you need to be prepared for this. Unsuccessful mediation often results in greater tension, higher costs and longer timescales than the conventional adversarial approach.

It can be difficult to be accepted as a truly impartial mediator if the initial contact has come from one of the parties only. If one party only is to be responsible for your professional fees it is inevitable that the other party will perceive you as being partial and not a truly independent mediator. Therefore RICS advises chartered surveyors to seek joint appointment as a mediator by all parties to the action.
7 Stage 6 – Litigation

7.1 Before the courtroom
If the boundary problem is not resolved out of court and leads to litigation, it is important that the chartered surveyor has an opportunity to brief the solicitor/barrister acting for his/her client at least 24 hours before the court hearing. Such litigation can take over a year to reach court from the date of submission of the written report, and it can prove valuable for you to pay another visit to the site in the days prior to the court hearing, to ensure that your memory of the boundary issues is fresh, and also to re-read the report several times.

7.2 In the courtroom
Giving evidence in a courtroom can be a daunting experience, especially if for the first time. There will be many people present, usually including the following:
- judge
- clerk to the court
- court usher

For the claimant:
- barrister
- solicitor
- solicitor’s secretary
- expert witness (or single joint expert)
- witness(es) of fact
- the claimant
- the claimant’s partner, business associates or staff.

For the defendant:
- barrister
- solicitor
- solicitor’s secretary
- expert witness (or single joint expert)
- witness(es) of fact
- the defendant
- the defendant’s partner, business associates or staff.

The above list contains at least 17 people, and there can also be friends and relations of both the claimant and defendant in the public gallery, swelling the numbers to between 25 and 30. Speaking in front of such numbers and in such an environment while under cross-examination can induce nerves even in the strongest witnesses, especially as barristers relish such occasions and are invariably word-perfect.

An important factor in performing in a professional manner in the courtroom is to have all of the facts, report and plans in a neat, logical bundle and easily accessible. Fumbling among haphazardly arranged documents under the steady gaze of a barrister and judge will undermine your self-confidence and cause unnecessary distraction, which will frustrate the proceedings.

Remember to speak clearly and slowly, and only answer the question that has just been asked. A common barrister’s tactic is to leave a slightly pregnant pause after a reply, in the hope that it will be nervously filled. This not only conveys an impression of nervousness and naivety, but also allows the barrister to cut the conversation short. It is recommended that you practise with a colleague the day before the court hearing, giving clear answers that actually concluded.

First, you will be questioned by your client’s own barrister, whose job it is to elicit certain answers, which will help illustrate the case to the judge in a favourable light for your client, this is called evidence in chief. You will then be questioned by the barrister acting for the other party, whose job it is to find as many faults as possible with the final boundary report and with your credibility, this is known as cross-examination. Avoid being defensive about your views, and do not to be drawn into the adversarial arena, one in which barristers are master.

It is important to answer each question honestly and accurately, even if it is to the detriment of your own client. Any attempt to modify statements to suit a client will be quickly exposed by the opposing barrister, and your professional credibility will collapse.

RICS members, if not already, should seriously consider appropriate expert witness training. RICS operates the Expert Witness Accreditation Service (EWAS). Until the Supreme Court decided to abolish immunity from legal action for experts (see Jones v Kaney [2011]) anyone who acted as an expert witness could not be sued in negligence. RICS Dispute
Resolution Services (DRS) has taken the initiative and developed an accreditation service (EWAS) which ensures property and built environment expert witnesses are trained, assessed, accredited and quality assured by a professional body. EWAS provides reassurance to parties who instruct RICS accredited expert witnesses that they are appropriately qualified and able to discharge the role they are instructed to undertake. More information on EWAS can be found at www.rics.org/uk/join/member-accreditations-list/expert-witness-accreditation-service/

RICS members should also reference and adhere to the RICS practice statement and guidance note Surveyors acting as expert witnesses (2014).

The opposing barrister will sometimes try a tactic of asking simple yes/no questions that may require a more in-depth answer. The court will demand an answer. A counter to this tactic is to directly address the judge and respectfully respond that in keeping with the oath that has been taken, the question cannot be answered in those terms and then outline the reasons why.

Judges are often impressed by accurate and up-to-date methods of measuring. They can also be impressed by detailed, accurate plans. The evidence should include a brief description of the method of measurement used and its accuracy (e.g. accurate to +/- 3mm (1/8″)). However, such detailed plans should be supplemented by very simple diagrammatic plans to show the conflicting boundary lines, preferably in different colours. Very large-scale plans are also helpful, especially where the difference between the two lines is very small. Avoid getting caught up in issues of digital data representation or accuracy versus precision-type arguments.

Cases are often won or lost on presentation in the witness box, but remember that all plans produced in court should be agreed with the other side before they are used. It is advisable to have some props in the witness box to aid explanation. Three scale-rules (one for the chartered surveyor, one for the judge, and one spare) should be carried. A magnifying glass is also useful when examining the fine detail of conveyance plans that may be passed to you during cross-examination. The time taken with the use of a magnifying glass (including its removal from the case) will also provide a few valuable moments in which to collect your thoughts before replying. The same applies when using a calculator or other device, although take care to always use well-known and trusted tools, as mishandling or confusion will undermine your confidence in the witness box. If during the hearing you need to leave the courtroom for whatever reason, you must bow to the judge before leaving and on re-entering.
8 Stage 7 – Recording the outcome in the Land Registry

In many cases a solicitor will have instructed you, and the recording of the outcome with Land Registry will be the solicitor’s responsibility, although he/she may want to seek your views and assistance. If you are working directly for private individuals or another type of professional adviser, they may wish to avoid the additional cost of a solicitor, and there is no reason why the chartered surveyor cannot assist them in making an appropriate application.

8.1 Applications relating to boundary agreements at Land Registry

When a boundary issue is resolved, it is crucial that the agreement between the parties is set out in the form of a deed and/or recorded as a determined boundary to ensure that the agreement is fixed in law and that the issue does not recur.

Note that boundary agreements are a method of recording the agreement between parties on boundaries and can ultimately be used as a method of resolving some boundary issues. Various other procedures such as remedial conveyancing, deeds of rectification, transfers or applications for adverse possession may also be necessary depending on the circumstances.


Land Registry can note agreements relating to boundaries and boundary structures in the form of a deed. Guidance on the form of a deed is given in Land Registry Practice Guide 8 Execution of deeds www.landregistry.gov.uk/professional-guides/practice-guide-8

Depending on the form of agreement reached, the document can be relatively simple, for example, “We … and … agree that the boundary between our respective properties is the hedge shown on the plan between points A–B.”

If the nature of agreement covers more complex issues (e.g. party wall agreements), the document should reflect that complexity to the degree required by the parties. It can contain plans, photographs and sketches if needed – anything that is capable of being electronically stored.

It can also contain a description of the agreed boundary and the provisions relating to it in as much specific detail as the parties require.

Plans contained in the agreement should ideally be capable of being interpreted by anyone. It is also vital that all the parties fully understand the nature of the agreement, and ensure that it fully reflects what has been agreed in a way that they can understand. It is more effective for it to refer to specific identifiable features on the ground rather than to rely solely on measurements.

The agreement should contain enough information that the boundary could be recreated on the ground in the event of the boundary features being destroyed by whatever cause, for example, flooding, fire, demolition etc.

Regardless of the detail contained in the boundary agreement, the boundary will remain a general boundary as defined by section 60(1) of the Land Registration Act 2002 (LRA), and its exact position will not be determined unless a successful application for determined boundary is made to the registrar.

Land Registry may be able to make an entry regarding the boundary agreement in the titles affected by the agreement. An application to make an entry regarding a boundary agreement should be made in Form AP1 (see Land Registry resources in appendix A) and requires a fee (see the applicable Fee Order at the time of application). In most situations two titles will be affected and both title numbers should be quoted on the form. As a boundary agreement does not constitute a disposition of land, no identity evidence is required and items 12, 13 and 14 need not be completed.

Appendix B contains a model boundary agreement document. This is not an officially approved Land Registry document, but it can be used as a DIY form in straightforward cases and may be perfectly adequate for many circumstances.
It is essential that any plans can be related to the current information on the Ordnance Survey map, otherwise the application may be rejected. If Land Registry cannot reconcile the position of the boundary in question as depicted on the title plan(s) with the deed plan(s), it may be necessary for it to instruct Ordnance Survey to update the mapping of the title(s) and to replace the title plan(s) accordingly.

In cases where there has been significant change it may be necessary to inspect the property. This will be carried out by Ordnance Survey in order to update the Ordnance Survey map only.

In many cases there will be no actual change in the boundary feature or the change will be so small that it triggers no change to the Ordnance Survey map, due to the limits of depiction within the specification. In these cases no change will be made to the title plans.

A copy of the document will be electronically scanned. An entry along the following terms will be made in the register:

‘An agreement dated … made between … relates to … [e.g. an agreement as to the north eastern boundary of the land in this title].

Note: Copy filed.’

Resolution of disputes is often a significant accomplishment and it is important that the resulting agreement is recorded at Land Registry. In this way, a public record of the agreement can be relied on should the issue reignite at some stage in the future.

**8.2 Application for a determined boundary**

If the owners intend to establish the exact line of the legal boundary, they should make an application in Form DB under section 60(3) of the LRA 2002; see Land Registry Practice Guide 40 Supplement 4 www.landregistry.gov.uk/professional/guides/practice-guide-40s4

This procedure allows for the exact line of a boundary to be determined and recorded on a registered title (section 60 of the LRA 2002). In the vast majority of cases, noting a boundary agreement as referred to above will be perfectly adequate, although on occasion the courts will direct that the agreed boundary be determined and recorded in the Land Register. A determined boundary may well protect boundaries from any future dispute. Chartered surveyors should note the ‘relative accuracy’ emphasis of the determined boundary process.

The plan supporting an application to determine the exact line of a boundary would ideally be the plan that you have produced as a result of your measured survey.

Land Registry Practice Guide 40 Supplement 4 (section 7 Determined boundary plan requirements) states that:

‘The plan supporting an application to determine a boundary:

- must clearly show the extent of the boundary to be determined by suitable reference such as colouring or edging
- must identify the start, end and any turning points of the determined boundary, preferably by way of lettered points
- must clearly show sufficient surrounding detail to allow the general position of the boundary to be identified on the Ordnance Survey map, and show its orientation, for example, a north point
- must be drawn to a stated scale – the preferred scale is no smaller than 1:200 and ideally no larger than A3 size (if necessary more than one plan can be used)
- must describe the relationship with physical features where the boundary coincides with them – for example, on which side of the physical feature the boundary runs, and/or through which point of the physical feature the boundary passes
- should describe those features used as points of reference in relation to the determined boundary, for example, “corner of the building” in the plan legend
- must only include information and detail that is relevant – any superfluous information that could clutter the plan or possibly contradict the relevant information should be left off, and any co-ordinates shown on the plan that are not National Grid co-ordinates must be removed
- must be signed by other owners where they have completed panel 9 of form DB, and
- must not bear any statement of disclaimer or endorsement which casts doubt on the accuracy of the plan such as “for identification purposes only”.’

In addition to the requirements set out in section 7, any measurements shown on the plan must:

- be accurate to +/-10mm
- be reduced to the horizontal – in other words, not the slope distance and
- be taken from at least two well-defined points on surrounding permanent physical features such as the corners of buildings.

Note: ‘Permanent features’ in this context are taken to be those which it is reasonable to assume will remain in position for at least ten years. Measurements from features that are subject to natural growth, movement or decay are not acceptable. See also section 8 Use of permanent ground markers.
Land Registry Practice Guide 40 Supplement 4 (section 11, appendix 2) contains an example of a determined boundary plan which, if followed, should be accepted by Land Registry.

Ideally the application should be made with the agreement of the adjoining owner. If this is not the case, Land Registry will serve notice on them. Therefore an application lodged without the involvement of the adjoining owner is not a solution for a boundary dispute. Box 9 of Form DB allows the adjoining owner to agree to the application.

8.3 Certificate of accuracy

The Royal Institution of Chartered Surveyors (RICS), the Survey Association (TSA) and Ordnance Survey have agreed that it is good practice for plans prepared by a chartered land surveyor or other suitably qualified professional to be endorsed with a certificate as to its accuracy:

‘I certify that the measurements shown on this plan are accurate to +/- 10mm.’
Appendices

Appendix A: References and online resources
Appendix B: Model boundary agreement template
Appendix C: Suggested list of documents relevant to a boundary dispute
Appendix D: Model of terms of business for boundary disputes
Appendix E: Entering neighbouring land – advice and model letter
Appendix F: Highways – an explanation of potential issues
Appendix G: Glossary and essential terms
Appendix H: Survey accuracy banding table
Appendix I: Quick reference specification sheet for topographical and measured building surveys
Appendix A: References and online resources

The following publications are particularly relevant:

Aldridge, T., *Boundaries, Walls and Fences* (9th edition), Sweet and Maxwell, 2004


Blom-Cooper, Sir Louis., *Experts in the Civil Courts*, OUP, 2006


Clarke, P.H., *The Surveyor in Court*, Estates Gazette, 1985 (out of print, but available from the RICS Library)


Land Registry online resources

Application for an official copy of a document referred to in the register: www.landregistry.gov.uk/_media/downloads/forms/OC2.pdf

Application for an official copy of the register and title plan: www.landregistry.gov.uk/_media/downloads/forms/OC1.pdf

Application for a search of the index map: www.landregistry.gov.uk/_media/downloads/forms/SIM.pdf

Application to change the Register: www.landregistry.gov.uk/_media/downloads/forms/AP1.pdf

Application to determine a boundary: www.landregistry.gov.uk/_media/downloads/forms/DB.pdf

A short history of land registration in England and Wales: www.landregistry.gov.uk/public/information/publication-schemes/publication-scheme#ashorthistory

Execution of deeds: www.landregistry.gov.uk/professional-guides/practice-guide-8

Land Registry plans: a summary of Land Registry plans records, pre-registration requirements, other plans related services: www.landregistry.gov.uk/professional-guides/practice-guide-40

Objections and disputes – A guide to Land Registry practice and procedures: www.landregistry.gov.uk/professional-guides/practice-guide-37

RICS professional guidance

All RICS official guidance can be downloaded free of charge for RICS members from www.rics.org/guidance


Surveyors acting as advocates (2nd edition), RICS practice statement and RICS guidance note, 2008


Daylighting and sunlighting (1st edition), RICS guidance note, 2012

Direct professional access to barristers (2nd edition), RICS guidance note, 2003 (current edition no longer in force and under review)

Guidelines for the use of GNSS in land surveying and mapping (2nd edition), RICS guidance note, 2010

Measured surveys of land, buildings and utilities (3rd edition), RICS guidance note, 2014


Rights of light (1st edition), RICS guidance note, 2010

Terms and conditions of contract for land surveying services (5th edition), RICS guidance note, 2009

Vertical aerial photography and digital imagery (5th edition), RICS guidance note, 2010

Client guides

Guides for the client and other professional advisers (available to download from www.rics.org/uk/knowledge/more-services/guides-advice/rics-geomatics-client-guide-series/).

Virtually real: terrestrial laser scanning: Understanding an evolving survey technology

Applications of aerial photography and digital imagery – Using ‘off the shelf’ and commissioned products

Flood damage – reinstating your boundary: What every property owner should know

Map projection scale-factor: Avoid the potential dangers of scale factor

Reassuringly accurate: Controlling accuracy for better results

Scale: Avoid tripping up over step changes in scale

Virtually level: Transition from traditional benchmarks to heighting using GNSS

Virtually right? – Networked GPS: A useful guide from RICS on aspects of cost effective networked GPS correction services
Public guides

Guides for Citizens Advice bodies (available to download from www.rics.org/uk/knowledge/more-services/guides-advice).

Boundaries

Compulsory Purchase Orders (CPOs)

Party walls

Rights to light

Subsidence

International

For more information on the international dimensions of land registration and boundaries, a large archive of online resources from the International Federation of Surveyors (FIG) can be found at www.fig.net
Appendix B: Model boundary agreement template

<table>
<thead>
<tr>
<th>Model boundary agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you need more room than is provided for in a panel, use the Land Registry continuation sheet CS and attach it to this form.</td>
</tr>
</tbody>
</table>

1. Title number(s) of the properties [leave blank if not yet registered.]
   a. 
   b. 

2. Properties
   a. 
   b. 

Date

3. 1st party [give full names as they appear on the register and address for correspondence (if not same as property a.])

4. 2nd party [give full names as they appear on the register and address for correspondence (if not same as property b.)]

5. The agreement:
   For example, ‘The parties hereby agree that the position of the boundary between their respective properties is as shown by the line on the attached plan between points A and B’. Or any appropriate wording that fully reflects the nature of their agreement.

6. Additional provisions [insert here any required or permitted statements, certificates or applications and any agreed covenants, declarations, etc.]
7. Execution [the parties must execute this transfer as a deed using the space below. If there is more than one party, all must execute. Forms of execution are given in Schedule 9 to the Land Registration Rules 2003.]

Signed as a deed by ……………………

In the presence of (name) ……………………

(address) ……………………………

Signed as a deed by ……………………

In the presence of (name) ……………………

(address) ……………………………

Signed as a deed by ……………………

In the presence of (name) ……………………

(address) ……………………………
Appendix C: Suggested list of documents relevant to a boundary dispute

Not all of the items below will necessarily be relevant to every case.

For the client's property
1. *Register entry, title plan and title no. – Supplied by client [ ] or to be obtained by the chartered surveyor [ ]
2. Title deeds (conveyances, transfers, deeds of grant, etc.) – Supplied by client
3. Photographs from the family/private sources – Supplied by client
4. Witness statements (obtained by client’s solicitor) – Supplied by client’s solicitor

For the neighbour's property
1. *Register entry, title plan and title no. – Supplied by client [ ] or to be obtained by the chartered surveyor [ ]
2. *Title deeds referred to in register entry (available from Land Registry as official copies) – Supplied by client [ ] or to be obtained by the chartered surveyor [ ]

Relevant to both properties/either property
1. Planning drawings (from local council planning department) – Supplied by client [ ] or to be obtained by the chartered surveyor [ ]
2. Vertical aerial photographs – Supplied by client [ ] or to be obtained by the chartered surveyor [ ]
3. Oblique aerial photographs – Supplied by client [ ] or to be obtained by the chartered surveyor [ ]
4. Terrestrial oblique photographs – Supplied by client [ ] or to be obtained by the chartered surveyor [ ]
5. Old Ordnance Survey maps – Supplied by client [ ] or to be obtained by the chartered surveyor [ ]

* Note these are only available where the land is registered.

Checklist of essential actions
- address of site and for correspondence
- client names
- contact details
- date of first contact (memo on discussion)
- purpose of service required
- potential/actual conflicts of chartered surveyor interest (declaration needed)
- client status (owner/occupier)
- subject status (initial enquiry/boundary demarcation/informal dispute/litigation)
- legal adviser details
- neighbour details.
### Documentary sources

<table>
<thead>
<tr>
<th>Item</th>
<th>Owner A</th>
<th>Owner B</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered title/number</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-reg document/date</td>
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<tr>
<td>Pre-contract enquiries/date</td>
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<tr>
<td>Previous surveys/date</td>
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<tr>
<td>Non-contract documents (e.g. planning)</td>
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<tr>
<td>Open source imagery either aerial (vertical and/or oblique or terrestrial (oblique))</td>
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<tr>
<td>Aerial photographs</td>
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<td>Private photograph sources</td>
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<tr>
<td>Affidavit evidence</td>
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<tr>
<td>Other (specify)</td>
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</table>

### Resources needed

<table>
<thead>
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<th>Description</th>
<th>Comment</th>
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</thead>
<tbody>
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<tr>
<td>Initial inspection</td>
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<tr>
<td>Survey</td>
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<tr>
<td>Report type</td>
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<tr>
<td>Legal support</td>
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<td></td>
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<tr>
<td>Subcontract services</td>
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</tbody>
</table>

### Other actions
- Terms and conditions sent? (date)
- Special instructions?
- Solicitor instruction issued?
- Report status (e.g. CPR 35)
- Valuation/evaluation involved?
Appendix D: Model of terms of business for boundary disputes

Property type: At:
Purpose: For: Date:

It is our intention to provide professional advice that is comprehensive, but impartial, to meet the requirements. This document is for the purpose of setting down our understanding of what is expected of me. It forms the basis of a contract for professional services.

Inspections: It is normal practice to inspect a property to the extent necessary for the purpose in question except when specifically asked not to do so or in circumstances where 'desk top' or similar informal advice or report is required (or in respect of a property which has previously been inspected). For boundaries this will involve taking measurements and photographs of the relevant parts of the property but is not necessarily a comprehensive survey or valuation of the whole property. We do not ourselves undertake digital surveys or laser scanning of properties or boundaries but will advise if the services of a specialist in that area are required. Some factors require research of a planning, legal or technical nature and our advice is always subject to a number of assumptions regarding the property under consideration. We may have to rely on information from owners or occupiers or their other (especially legal) advisers in this respect. If, subsequently, fuller information is received which conflicts with the assumptions made, we reserve the right to act on this as appropriate.

Confidentiality: We are conscious that clients’ instructions often involve confidentiality and we endeavour not to conduct inquiries in such a way as to prejudice that confidence. We may however, have to divulge certain information on a ‘need to know’ basis at our discretion.

Limiting factors: [For general professional advice, these terms of business should be interpreted and applied as appropriate]. All evaluation of a property boundary and neighbour issues is subject to some limitations and we ask you to have regard to the following:

1. The documentary basis of tenure and title is critical and we cannot undertake to overcome deficiencies in this. The paper title has in modern times generally been replaced with the electronic Registered Title held by and Registry. Original deeds are not always available. Even where they are or where an owner has retained important older legal documents, their accuracy may be in question and/or wording of deeds and the plans that accompany them, may be imprecise. Title plans held by Land Registry offices accord to the general boundary rule and cannot be considered accurate indicators of boundary positions or ownership of fences.

2. Mapping and cartographic changes occur over time. Ordnance Survey continuously updates its mapping and makes changes to features that are new, modified or deleted and that are within scope of its specification. There is however a specific disclaimer that such features are not in any way indicative of a legal boundary. The thickness of a line on the map is significant when scaled up from 1:10 000, 1:2500 or 1:1250 scale Ordnance Survey mapping. This means there is a limit to the degree of accuracy of the position of features. Both historical Ordnance Survey mapping and older pre-registration conveyance plans may differ sharply from the reality on the ground. We can only advise where we think this is a material consideration and it is not always apparent from the outset.

3. Actions of the parties can have a bearing on outcomes; if a party to a contentious issue has conceded some point or other, it may not be possible for us to reverse the consequences of that action.

4. In litigious cases where we are asked to act as expert witnesses and to give evidence in court proceedings, we are bound by the RICS practice statement and guidance note Surveyors acting as expert witnesses (2014) and
the Civil Procedure Rules (particularly CPR 35) and we owe our primary duty to a court regardless of who is responsible for our fees. Copies of these documents can be provided electronically on request. **There are separate terms of business for expert witness work.**

5 **Exceptions that apply to our work** in this specific area and although we can undertake valuations, surveys (measured and condition), records of condition and other investigations, these services are not automatically included and may require further terms of business to be provided. We do not undertake investigations of hazardous substances or environmental risks, or similar services where we are not accredited to provide them. We are not accredited to test electrical, gas or telecommunications installations, provide energy performance certificates or give specialist advice in areas such as environmental hazards. Neither do we give accountancy, legal or engineering advice.

6 **Limitations on access can fetter our investigations** This may relate to areas inaccessible for inspection, or facts and documents in the possession of others; we will take reasonable steps to overcome information gaps but cannot be responsible for matters outside our control.

7 **We are bound by specific legal directives** regarding the reporting of suspected criminal activity including money laundering and tax evasion. We will comply with the law and make disclosure as required to appropriate authorities.

8 **As chartered surveyors, we undertake to give advice using all reasonable professional skill and care** In particular, we carry out such inspections and investigations as are, in our professional judgement, appropriate and possible in the particular circumstances. Where we make assumptions regarding the property in making reports and giving advice we will endeavour to state these but we do not accept any duty to verify them.

9 **We undertake to report to a client** from time to time, either as a formal document or less formally by letter, email, fax or telephone setting out our advice and opinions. Any such report or advice will be confidential to the client for the specific purpose to which it refers and while it may be disclosed to other professional advisers assisting in respect of that purpose, we retain copyright and it shall not be disclosed, copied to any other person or published/communicated in any form without our written consent. Verbal reports can be given but are subject to instructions and the terms of any more formal report. No liability is accepted where clients have committed themselves to any course of action on the basis of a verbal or other preliminary/incomplete report or on the basis of partial information.

10 **No liability is accepted to any third party** A third party relies on our reports at their own risk unless their name, the nature of the benefit they may claim pursuant to a contract under which we are providing a service and the fact that they might place reliance on our service are named in this document or otherwise notified to us in writing so as to form part of these terms and conditions.

11 **We must have a regard for our own safety**, that of the public and of the owners/occupiers of buildings as well as respecting the contents of buildings. We will not cause damage to property; use destructive survey techniques, access fragile roofs or expose chartered surveyors to hazards or environments requiring special protective clothing. We will not move fixtures or fittings, nor disturb fitted furnishings, occupiers’ stored items or heavy furniture. We will use such equipment as we deem necessary at our discretion, to enable us to carry out instructions to our reasonable satisfaction.

**Fees:** In the absence of any other agreed basis, our fees will be based on an hourly rate of [ ... ] plus VAT and disbursements. The currency of settlement is pounds sterling (GBP). Reduced rates apply for travelling time where significant. For more demanding and priority tasks such as proofs of evidence, we normally charge a higher fee depending on the nature of the work involved. Formal valuations are normally subject to an ad valorem fee dependent on the amount of valuation and property type. For some types of work such as property inspection reports we may be able to quote a fixed fee for all or part of the work. For others there may be a percentage based fee (e.g. on sale or acquisition of land). Where tasks become protracted we reserve the right to render interim accounts as the work progresses. Our hourly rates are liable to review in line with our fee levels generally. Fees are payable 14 days from invoice and interest at 1% per month of the total fee plus expenses may apply to late payments. The person named above is the default client responsible for our fees unless there is an undertaking from another party to pay these. Any changes a client wishes to make in this respect are to be communicated to us in writing and we reserve the right to refuse to undertake work on that basis.

**Termination:** Once work has been commenced, clients are contracted to pay the entire agreed fee, (or an appropriate proportion plus disbursements at our absolute discretion) plus VAT, whether or not their objectives are achieved. Our instructions can be cancelled at any time before work is commenced without charge but thereafter on reasonable written notice (usually 14 days). Liability for fees remains up to the effective date of cancellation.
Client's money and documents: We do not hold or receive money on behalf of clients (see RICS Regulatory rules on holding clients’ money at www.rics.org/uk/regulation/how-rics-regulates/). We may hold documents for them but we do not have secure storage for these other than normal intruder and fire alarm systems. While we will take reasonable care of documents left in our possession, this is at clients’ own risk. Similarly we can take no responsibility for loss or damage of electronic data.

Complaints: If you are dissatisfied with the service received, a complaints procedure operates. Details are available on request.

Application: These terms and conditions shall apply as amended if necessary by correspondence with us, unless any alternative basis to like effect is expressly agreed between us and shall be subject to the English Law. They will also apply with equal effect to any attorney, personal representative or executor. Should we be unable to complete the tasks assigned to us by way of legal or physical incapacity and alternative arrangements for our work to be taken over by another person cannot be put in place, you will notified and thereafter at liberty to appoint another person of your choice. In such circumstances our fees in relation to work completed to that time remain payable and our liability to a client shall be limited to the quantum of our fees. Any dispute between us shall be settled in default of other mechanisms, by reference to a single independent expert appointed for the time being by the President of RICS, and whose decision shall be final and binding and any other judicial determination of a dispute shall be governed by the laws of England and the English Courts.
Appendix E: Entering neighbouring land advice and model letter

A chartered surveyor who is instructed by a client to set out a boundary following an alleged encroachment by a neighbour should exercise caution and be careful to avoid any physical damage. The surveyor will need access to the land in dispute and therefore runs a risk of trespassing. Even if their client’s plans are large-scale, detailed and clear there may well be an issue as to the position of the true boundary, for example, where the same land has been included in different titles, or in cases of adverse possession and of conflict with the neighbour. Therefore, the chartered surveyor may consider whether it would be appropriate to adopt any or all of the following measures:

1. to obtain written authority from their client to enter onto any disputed land
2. to obtain a written indemnity from their client in order to indemnify the chartered surveyor against any claim that may be made by the neighbour arising out of the chartered surveyor’s entry onto the disputed land (except in so far as the claim arises from physical damage caused by the chartered surveyor’s own negligence), including the costs of defending any such claim
3. to inform the neighbour in advance of his/her intention to enter onto the disputed for the purpose of the survey and seeking confirmation that he/she will not object
4. to attempt to speak to the neighbour immediately before entering on the disputed land in order to carry out the work

A chartered surveyor will not usually wish to enter onto the disputed land if that will lead to a direct confrontation with the neighbour. In the event that the chartered surveyor considers that it is appropriate to enter onto the disputed land contrary to an express refusal by the neighbour to allow entry, the surveyor should be aware that they risk being drawn into the dispute in a personal capacity that may undermine the client’s case and may compromise the surveyor’s ability to continue acting as an expert in the case.

If court proceedings are underway, a judge will normally direct that an obstructive neighbour should allow access to the chartered surveyor.

The following is a specimen letter (to be amended as appropriate to the circumstances) which might be adopted in suitable cases where the chartered surveyor proposes entering onto the neighbour’s side of a boundary feature in order to set out a boundary.

Dear [insert name]

I am a chartered surveyor and I have been retained by your neighbour [insert name of neighbour] to advise as to the position of boundary between your properties. Your neighbour believes that the legal boundary lies approximately [identify approximate position of the boundary as contended for by the client] and that your [identify boundary feature] encroaches over the legal boundary.

In these circumstances I propose to visit the site for the purpose of setting out the boundary line as it appears from [insert neighbour’s title documents or identify the document(s) which form the basis of the client’s contention as to the boundary]. In that way the parties will be able to see on the ground the extent of the differences between them. No damage will be caused by the survey markers and you will be free to disagree with the line as set out [this might be inappropriate if the client intends to remove the neighbour’s boundary feature].

I am aware that the position of the boundary is controversial but it seems to be in everyone’s interest to know where each party believes the boundary is located. Only then can the parties establish what the differences between them are and whether agreement is possible.

[If opposition is anticipated] Refusing access will only increase costs as solicitors will become involved. Furthermore, if court proceedings have to be taken a judge will order the parties to allow access to chartered
surveyors in any event, and by that stage significant costs will have been incurred. I hope that by identifying where each party alleges the boundary lies the parties may be able to make progress towards an agreement that avoids those costs.

Signed: Date:
Print name:
Appendix F: Highways – an explanation of potential issues

There is a general presumption that the owner of land adjoining a highway owns the subsoil to the middle of the highway (because, even though highways maintainable at public expense usually vest in the highway authority, the subsoil beneath the highway usually does not vest). This offers an owner of land adjoining a highway the potential to use and exploit the land that is in their ownership beneath the highway. They must not break open the highway or interfere with the use of the highway or interfere with other third-party rights (for example, drains that may be vested in a highways authority or pipes/drains/cables, which are the subject of easements), but subject to that they can exercise their ownership rights. Such rights might include, for example, taking minerals, laying pipes, or constructing a vault, arch or cellar beneath the highway (but the owner can only construct a vault, arch or cellar beneath the highway with the specific consent of the appropriate highway authority or local authority).

The presumption that an owner of land adjoining a highway owns the subsoil to the middle of the highway is based on the presumption that the highway was dedicated by the predecessors in title of the owners of properties adjoining the highway, and that the subsoil of the highway will have passed under subsequent conveyances of those properties. The presumption can be rebutted. It will not apply where, for example, the land beneath the highway has been separately disposed of or reserved (which is quite common in respect of building estates, highways formed under the Turnpike Acts where the trustees acquired the soil, highways laid out under the Enclosure Acts, or where the subsoil has been acquired for a trunk road). Therefore, legal advice must be taken in each case.
Appendix G: Glossary and essential terms

**Accuracy**
In general, when survey accuracies are specified, they refer to vector errors and are defined statistically as root mean square errors (RMSE) or standard deviation. The RMSE or standard deviation for bivariate data is equivalent to 68% of the normal distribution of random errors and is often used to express confidence in measurements. The standardised normal distribution table determines the ratio of RMSE to different confidence or measurement error intervals. A 90% tolerance or confidence in a set of measurements is equally to 1.65 times the RMSE or standard deviation when a representative sample of points is tested. Thus an RMSE 0.1m indicates that in a representative sample of 100 points, not less than 68 shall be correct to better than 0.1m, and not less than 90 points shall be correct to better than 0.165m. Any errors exceeding three times RMSE (outside of 99.7% of confidence or tolerance in the normal distribution of errors), in this case 0.3m, may be regarded as gross errors or mistakes.

**Precision**
In terms of survey measurement, precision relates to the degree to which repeated measurements show the same results.

**Absolute accuracy**
The measurement of RMSE of normally distributed error vectors relative to a defined grid and/or height datum. This is typically measured from the nearest survey control marker that was used as part of the primary grid establishment.

**Relative accuracy**
The measurement of RMSE of normally distributed vector errors between proximate features shown in survey or setting out on the ground. The calculation can be made independently of the absolute accuracy of features shown on a grid (i.e. the distance between two buildings measured from the same survey).

![Image of accuracy and precision comparison](image)

**Figure 2: The difference between accuracy and precision.**

**Alternative dispute resolution (ADR)**
A range of options for resolving disputes without going to court. ADR includes mediation, adjudication, arbitration, conciliation and ombudsman schemes.
**Case bundle**

All documentation relating to the boundary dispute. Case bundles should comply with strict and quite intensive provision as laid down within the current Civil Proceedings Rules (see appendix A). Bundles of documents should comply with paragraph 3 of Part 39, *Miscellaneous provisions relating to hearings*. These guidelines are additional to those requirements and they should be followed wherever possible. The preparation of bundles requires co-operation between the legal representatives for all parties.

**Covenants**

A contract arising by a deed. Covenants can be both permissive and restrictive. In terms of land, covenants tend to be mostly restrictive. A restrictive covenant is a promise by one person with another, for example, by a buyer of land with a seller, not to do certain things with the land, such as to build on it or use it as a shop or factory. It binds the land and not the buyer personally and therefore ‘runs with the land’. This means that the covenant continues even when the buyer sells the land on to another person. Restrictive covenants also continue to have effect even if they were made many years ago and appear to be obsolete.

**Curtillage**

The land within which the building is set and which belongs or once belonged to it and is or once was used in conjunction with it. The extent of the curtilage can be hard to determine. It may, for example, in the case of a farm, extend to include barns, stables and sheds.

**Determined boundary**

The *Land Registration Act* 2002 provides for the recording of ‘determined boundaries’. The aim is to record a boundary’s position to a precision of +/- 10 mm. The determined boundary should be mapped relative to surrounding ‘hard’ detail (anything made of brick, stone or concrete that is expected to endure) to a high level of accuracy that is certified by a chartered land surveyor. The intention is that another chartered land surveyor would be able to relocate the boundary. A determined boundary should be agreed between the neighbouring landowners before it can be recorded. The only practical difference between a boundary agreement and a determined boundary is that the determined boundary is recorded on a plan whose accuracy has been certified by a chartered land surveyor.

**Disclosure**

To make something known publicly, or to show something that was hidden.

**Easement**

A right that benefits the land in that it ‘eases’ the use of the one land and constitutes a restriction on the use of the other ‘serving’ land. The three necessary parts of an easement are that:

- it applies to land affected by it (servient tenement)
- it is annexed to other land, which has the benefit (dominant tenement) and
- it is a right, which in common sense and public policy is capable of forming the subject matter of an easement.

Easements and covenants often run in parallel, but an easement is expressed as a right of the dominant tenement, whereas a covenant is generally expressed as an obligation on the servient tenement.

**Fee schedule**

A list or table showing fixed fees for goods or services. The actual set of fees to be charged.

**First registration**

An application to put previously unregistered land on the register.

**General boundary rule**

England and Wales operate a ‘general boundaries’ system of land registration (as does Scotland and Ireland). A title plan with ‘general boundaries’ shows the boundary of a property in relation to a given physical feature on the ground, such as a wall or hedge as identified on the Ordnance Survey map. The red edging on a Land Registry title plan is therefore not definitive as to the precise position of the boundaries. For this reason official copies of title plans carry the following warning:

‘This title plan shows the general position of the boundaries: it does not show the exact line of the boundaries. Measurements scaled from this plan may not match measurements between the same points on the ground.’
Global navigation satellite systems (GNSS)
The standard generic term for satellite navigation systems that provide geospatial positioning, with global coverage. GNSS allows small electronic receivers to determine their location (longitude, latitude, and altitude) to within a few metres using time signals transmitted along a line-of-sight by radio from satellites. The quality of this position can be improved to the order of cm or mm with the appropriate observation and processing techniques.

Hedge and ditch explanation
The origins of the principles applicable to boundary hedges date from the Parliamentary land enclosures of the 18th century or earlier. It is presumed that the owner of a hedge owns the artificial ditch beyond it. This presumption is based on the premise that when land was first subdivided, the owner of newly acquired land stood on their boundary looking inwards, dug their drainage ditch, which formed the initial physical delineation of their land extent, within their own boundary (i.e. with the outer vertical face of the ditch aligned to the property boundary), throwing up the spoil on their home side, forming a bank. To create a more substantial and upstanding boundary enclosing feature they then planted a hedge was then planted on the bank mound – often of ‘quickset’- blackthorn or hawthorn, which quickly grew into a substantial stockade fence to restrain animals. The presumption has no application where the ditch was dug at a time when the two adjoining parcels of land were in common ownership. The presumption only applies to a hedge and ditch and not, for example, to a hedge lying between two ditches or a hedge without a ditch. The presumption does not apply:
- if it can be shown that the ditch was not man-made
- if it can be established that the boundary feature was made while the lands on both sides were in common ownership or
- where there is only a ditch, or a bank, or a ditch on both sides of a hedge, or banks on both sides of a ditch.
In these instances the applicant will need to demonstrate ‘acts of ownership’ to support a claim of ownership. Acts of ownership may include:
- trimming a hedge
- cleaning out a ditch or
- replacing a wooden fence or a wall.
However, bear in mind that such acts are not conclusive since they might often be done for the convenience of the party doing them and not under any right. Acts of ownership by one party without the knowledge of the other party will not rebut a presumption.

Mediation
An effective way of resolving disputes without the need to go to court. It involves using an independent third party (a mediator) who helps both sides to come to an agreement. The role of the mediator is to help parties reach a solution to their problem and to arrive at an outcome that both parties are happy to accept. The mediator remains neutral throughout the process. The focus of a mediation meeting is to reach a common sense settlement agreeable to both parties in a case. Mediation is a voluntary process and will only take place if both parties agree. It is a confidential process where the terms of discussion are not disclosed to any party outside the mediation hearing.

National Land Information Service (NLIS)
NLIS provides professionals with online access to a number of data providers, such as government agencies and local authorities. All the various searches necessary when dealing with property can be carried out through NLIS e.g. local authority, coal mining and Land Registry.

Orthorectified
Orthorectification is the process of using a mathematical model and a digital elevation model (DEM) to correct distortions in raw images such as aerial photographs. An ortho photo or orthophotograph is an aerial photograph that has been geometrically corrected (‘orthorectified’) such that the scale of the photograph is uniform and the positions of the pixels are correct, meaning that the photo can be considered equivalent to a map. Orthophotographs have the positive attributes of a photograph such as detail and timely coverage, and the positive attributes of a map including uniform scale and true geometry.
Parcels Clause  
This is the clause that describes the land and defines the boundaries. In conveyance deeds it always begins “ALL THAT piece or parcel of land” and is usually found in the lower half of the first page of the deed. Transfer deeds made using Land Registry form TR1 will usually describe the land only in terms of the registered title number. In other words, they are relying on the general boundary shown on the title plan, which is neither precise nor is it likely to be the legal boundary. In this case, efforts should be made to locate a copy of the pre-registration title deeds if the true position of the legal boundary is to be discovered.

Party wall  
In co-joined property such as semi-detached or terrace houses a shared wall with a neighbour is known as a party wall. It separates buildings belonging to different owners. Where a wall separates two different-size buildings, only the part that is used by both properties is considered to be a party wall. The rest belongs to the person on whose land it stands.

Photogrammetry  
The art, science and technology of obtaining reliable information about physical objects and the environment through processes of recording, measuring and interpreting photographic images and patterns of recorded radiant electromagnetic energy and other phenomena.

Portable Document Format (PDF)  
Proprietary to Adobe Systems, a PDF is a platform independent file format that lets the user capture and view information, from almost any application on any computer system, and share it universally. The recipient does not need to have access to the software programme used to create the original document. PDFs have greater security, stability and multi-platform capabilities than other forms of digital document. With increased stability comes a smaller file size, aiding electronic and portable hard drive transfer and internet-based applications.

Raster data  
A representation of the world as a surface divided into a regular grid of cells. Raster models are useful for storing data that varies continuously, as in an aerial photograph, a satellite image, or an elevation surface.

Single joint expert (SJE)  
An innovation introduced under the new Civil Procedure Rules (see www.justice.gov.uk/courts/procedure-rules/civil) to reduce the cost of expert evidence. An SJE is a single person jointly appointed by the parties with court approval. The court has the power to direct the use of an SJE, and where the parties cannot agree on an individual, to impose a method of identifying and appointing a suitable person.

The textual description or the plan?  
The first requirement is to establish whether the text of the deed take precedence over the accompanying (conveyance or transfer) plan. A phrase such as ‘which is for the purpose of identification only shown on the accompanying plan’ tells us to ignore the plan and to concentrate on the text. A phrase such as ‘which is more particularly delineated on the accompanying plan’ tells us to ignore the text and to concentrate on the plan. Unfortunately, too many conveyance deeds employ the phrase ‘which is for the purpose of identification only more particularly delineated on the accompanying plan’, which only serves to confuse. Even when the deed clearly says to ignore the plan, it is usually the case that the text of the deed tells you so little that it is necessary to consider the information shown on the accompanying conveyance plan in the hope that this will give the additional information that helps to form a clearer picture of where the boundaries really are.

Title plan  
A large-scale location plan, usually drawn to a scale of 1:1250 for urban areas or 1:2500 for rural areas and 1:10 000 for mountain and moorland areas showing the approximate position of the boundaries of the property, edged in red, in relation to the surrounding properties.

Unregistered land  
Land that has not been registered with Land Registry. The owner of unregistered land will often have a bundle of deeds, which form a record of previous sales, mortgages and other dealings with the land. However, if the land is mortgaged, the lender normally holds the deeds as security for their loan. There is usually no public record of the information contained in the deeds.
**Vector data**

A representation of the world using points, lines, and polygons. Vector models are useful for storing data that has discrete boundaries, such as country borders, land parcels, and streets.

**Vertical and oblique imagery**

There are two types of aerial photographs: vertical and oblique. Vertical photographs give a bird’s-eye view of landscapes as they are taken looking directly (vertically) down at the ground. Oblique photographs are taken at an angle and are normally focused on particular sites or other features.

**Watercourses**

Where properties are separated by a natural non-tidal river or a stream, the presumption is that the boundary follows the centre line of the water measured at normal winter water level (ad medium filum aquae) so that each owner has half of the bed. If the course of the stream gradually changes over a period of time, the position of the boundary will change accordingly – see Land Registry Practice Guide 40 for more information. However, changes as a result of human agency do not lead to an alteration in the position of the boundary. Where there is a sudden, but permanent change in the course of the stream, whether or not it is due to natural causes, the boundary will remain along the centre line of the former bed.
# Appendix H: Survey accuracy banding table

This survey accuracy banding table has been reproduced from the RICS guidance note *Measured surveys of land, buildings and utilities*.

<table>
<thead>
<tr>
<th>Plan accuracy (X,Y)</th>
<th>Height accuracy (Z)</th>
<th>Note:</th>
<th>Legacy output scale</th>
<th>Min size of feature shown to scale (not symbolised)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Band</td>
<td>Standard deviation</td>
<td>Band</td>
<td>Standard deviation</td>
<td>Example survey types/use</td>
</tr>
<tr>
<td>A +/- 2mm</td>
<td>A +/- 2mm</td>
<td>N/A</td>
<td></td>
<td>Monitoring, high accuracy engineering setting out and fabrication surveys.</td>
</tr>
<tr>
<td>B +/- 3mm</td>
<td>B +/- 3mm</td>
<td>N/A</td>
<td></td>
<td>Monitoring, high accuracy engineering and measured building surveys and setting out.</td>
</tr>
<tr>
<td>C +/- 5mm</td>
<td>C +/- 5mm</td>
<td>N/A</td>
<td></td>
<td>Engineering surveying and setting out, high accuracy measured building surveying, heritage recording.</td>
</tr>
<tr>
<td>D +/- 10mm</td>
<td>D +/- 10mm</td>
<td>+/- 25mm</td>
<td></td>
<td>Engineering surveying and setting out, measured building surveys, high accuracy topographic surveys, determined boundaries.</td>
</tr>
<tr>
<td>E +/- 25mm</td>
<td>E +/- 10mm</td>
<td>+/- 50mm</td>
<td></td>
<td>Measured building surveys, topographic surveys, low accuracy setting out, net area surveys.</td>
</tr>
<tr>
<td>F +/- 50mm</td>
<td>F +/- 25mm</td>
<td>+/- 50mm</td>
<td></td>
<td>Low accuracy measured building surveys, topographic surveys, high accuracy utility tracing, gross area surveys.</td>
</tr>
<tr>
<td>G +/- 100mm</td>
<td>G +/- 50mm</td>
<td>+/- 100mm</td>
<td></td>
<td>Topographic surveys, low accuracy measured building surveys, utility tracing surveys, boundary mapping.</td>
</tr>
<tr>
<td>H +/- 250mm</td>
<td>H +/- 125mm</td>
<td>+/- 250mm</td>
<td></td>
<td>Low accuracy topographic surveys, national urban area mapping, geotechnical mapping, tree surveys.</td>
</tr>
<tr>
<td>I +/- 500mm</td>
<td>I +/- 500mm</td>
<td>+/- 500mm</td>
<td></td>
<td>Low accuracy topographic mapping, national non-urban mapping, general boundary mapping, asset mapping.</td>
</tr>
<tr>
<td>J +/- 1000mm</td>
<td>J +/- 1000mm</td>
<td>+/- 1000mm</td>
<td></td>
<td>Low accuracy route/corridor planning surveys, GIS mapping, asset mapping.</td>
</tr>
</tbody>
</table>

The accuracy banding table does not determine the level of detail shown for each feature, although it does indicate the minimum size of feature that will be shown true to scale and not symbolised. In general, features will be surveyed by the minimum number of points required to show their geometric position or extents, for example, a tree can be described by a centre point with trunk diameter, spread diameter and a ground and crown level or height. Clients are advised to seek advice from their survey consultant to ensure the correct levels of detail on a feature to be surveyed, and to confirm this in the type of survey outputs required (i.e. imagery, scan clouds, bespoke measurement or output requirements).
Appendix I: Quick reference specification sheet for topographical and measured building surveys

The quick reference specification sheet below summarises the full RICS guidance note *Measured surveys of land, buildings and utilities* (2014). It is intended for use on small or straightforward schemes and assumes that the first option clause (where appropriate) is used throughout. Margin numbers indicate the relevant main guidance sections or clauses. The specifier should tick the requirement(s) needed in each subject category. Where no item is selected for a particular category, the chartered surveyor will assume that there is no requirement. Additional information, where necessary, should be provided in a covering letter.

<table>
<thead>
<tr>
<th>Clause</th>
<th>Subject</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Project information</td>
<td></td>
</tr>
<tr>
<td>1.1.2</td>
<td>Client</td>
<td></td>
</tr>
<tr>
<td>1.1.3</td>
<td>Contact + telephone</td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td>Survey extent</td>
<td>Location plan attached</td>
</tr>
<tr>
<td>2</td>
<td>Band and/or scale</td>
<td>1:50/D</td>
</tr>
<tr>
<td>2.1</td>
<td>Plan control grid</td>
<td>Local grid</td>
</tr>
<tr>
<td>2.2</td>
<td>Level datum</td>
<td>GPS derived national datum</td>
</tr>
<tr>
<td>2.3</td>
<td>Detail survey</td>
<td>Boundaries</td>
</tr>
<tr>
<td>2.4</td>
<td>Trees</td>
<td>Foliage lines</td>
</tr>
<tr>
<td>2.5</td>
<td>Height information</td>
<td>Spot heights</td>
</tr>
<tr>
<td>3</td>
<td>Underground services</td>
<td>Cover position</td>
</tr>
<tr>
<td>4</td>
<td>Buildings external</td>
<td>Outline</td>
</tr>
<tr>
<td>4.1</td>
<td>Buildings internal</td>
<td>Ground floor</td>
</tr>
<tr>
<td>5.1</td>
<td>Plan reproduction</td>
<td>Final drawings</td>
</tr>
<tr>
<td>5.2</td>
<td>Digital data</td>
<td>State format</td>
</tr>
<tr>
<td>5.6</td>
<td>Computer media</td>
<td>Internet download</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Scale factor may apply*
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