E-LITIGATION IN THE TECHNOLOGY AND CONSTRUCTION COURT: AN EXPERT'S EXPERIENCE

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Introduction

Construction projects are increasingly run on a paperless basis. Drawings, specifications, bills, schedules and letters are prepared, sent, received and retained in digital form.[1] Communications between project team members, and all others involved, are predominantly by email. By contrast, the conduct of construction litigation and arbitration has always been paper based. Even where all project documents were in digital form, the practice in Technology and Construction Court (TCC) litigation, arbitration and adjudication has been for electronic documents to be printed so that they are made available to the parties, advocates and the court in their printed paper form. More recently, with the support of the UK courts,[2] documents are being exchanged or disclosed in electronic form.[3] Litigators are reluctantly being moved toward trial preparation that is computer based, rather than a paper based exercise working with electronic file bundles, document management systems and IT specialists.

When working with e-documents, preparation of claims, disclosure, analysis of documents and preparation for trial requires different skills, technology, experience and skills. Changes to working practices are required by litigators, paralegals, experts and tribunals. Members of the bar, like others, will find their practice is affected. The purpose of this paper is to consider some of the likely consequences on trial preparation of working with documents that are predominantly in digital form. The consequences are potentially widespread.

This paper on e-litigation[4] is written from my perspective, acting as expert witness on quantum on complex construction disputes, a role that involves detailed consideration of large volumes of project documents.[5] Since early 2010 the bulk of documents I have seen in disputes have been in electronic

1 Also referred to as 'e-documents'.

2 A revised Civil Procedure Rule Practice Direction, 31B Disclosure of Electronic Documents, was introduced in October 2010, replacing CPR 31 Practice Direction 2A (Electronic Disclosure). It can be found at www.justice.gov.uk/civil/procrules_fin.

3 Also known as 'electronic disclosure' or edisclosure or e-disclosure.

4 Litigation conducted predominantly on a paperless basis.

5 I am not an IT expert nor connected in any way with provision of litigation support software solutions for e-disclosure. Much of the paper is based on direct experience as expert on quantum in construction and professional negligence matters in England between 2008 and 2010.

form.[6] Three points were evident in those recent disputes: most individuals involved were unprepared and had no, or little, training in handling electronic documents; the benefits of using document handling systems were counterbalanced by some significant difficulties; and there were some unexpected consequences that directly affected the conduct and outcomes of the matters involved. The impact of using e-documents on the construction bar, solicitors and experts is immense.

From paper to e-documents

Documents are the bedrock upon which litigation proceeds. Changes to the form in which documents are held (whether held by clients or by lawyers), or changes to the way we handle documents, will therefore leave few participants in litigation unaffected. Those involved in litigation use documents in different ways. The litigating lawyer's primary concern will be to ascertain what relevant documents exist; to disclose those that are relevant without disclosing privileged material; to see that the opposing party does likewise; to use documents to brief witnesses, experts and counsel; and to provide documents for the trial. All of this might be summarised as seeing that the documents are used to prove the case for his client. The expert is likely to be involved in extensive analysis of documents and, to a more limited extent, with identification of which documents should be, but might not have been, disclosed. The advocate's involvement might be classed as falling into four parts: reading-in initially to advise or to prepare pleadings; participating in interlocutory applications relating to further disclosure where required; intensive reading of documents pre-trial; and using limited documents during the trial. For the court or tribunal, reading documents may be required on a limited basis as part of interlocutory applications. The court's review of documents is otherwise likely to be limited to those to which its attention is directed.

The form in which those documents were created, or exchanged, has changed in recent years. Before 2000 the practice was to print out documents for distribution by post. Draft documents may have been exchanged on floppy disks, but the final version was invariably paper based. Today, with use of email as the primary means of communication, there is no longer a need to print documents before sending them to others. Hence a paper based file, if there is one, cannot be relied upon as representing what was actually transmitted by email. Alternatively documents are 'uploaded' to a website which acts as a project depository.

Gaining access to documents

Working with paper copies of documents has undoubted attractions and difficulties. Documents are easy to read in paper form, easy to tag, easy to annotate, and in paper form, can easily be passed across a room to show to a colleague. Some simply prefer holding paper to looking at images on a laptop, monitor or e-reader. Against the use of paper are the cost and time consumed

6 The views in this paper are based on experiences in large and small scale matters in adjudication and construction litigation in UK.

photocopying, problems of transporting large volumes of documents and, once received, the inevitable need to read through all of the documents in order to at least check that nothing has been misplaced. Equally, use of email has increased the volume of documents generated on projects, somewhat exacerbating the cost and time working with paper copies.

The trend away from use of paper has gained support from some unlikely quarters: pressure from colleagues and support staff to use less paper for environmental reasons; storage concerns; the availability of more convenient devices for reading digital documents such as the iPad; and the development of software that makes the tagging, annotation and selection of documents in their digital form easier.

Realistically, it is no longer possible to collate documents in paper form, or to expect project documents to exist primarily in paper form. Today most of those project documents will be created, held, altered and distributed in digital form. Many will never have been printed, nor were even created with the intention of, or in a format that suits, printing. This has serious repercussions for construction litigators. To view one's own party's documents one can no longer visit a site office and, after a day's review of paper based files, work out what copies are required. To do so today would miss most of the project's records and exchanges between parties, because those documents are held on computers. In the past, the contractor's key documents were to be found in the site office with perhaps a small collection of papers privately held, often in the site manager's car. Today the key documents will be held on an office server or on the site manager's laptop computer. This applies whether referring to the contractor's files or engineer's files. Indeed, there is little point in visiting the site office at all if the documents can all be quickly secured remotely.

Collating documents in their native digital form is now faster, cheaper and more convenient than collation in paper form. In the past, days or weeks were spent in a client's remote office reviewing paper in files and boxes and cabinets, working out what might be relevant, arranging copies of selected documents and awaiting delivery of copies many weeks later. Now, one can leave a litigant's office (whether site office, design studio or head office) with a memory stick or CD full of files, or electronic access to a project database. Equally, if presented in the right form, access to an opponent's files, or entire disclosure, might be just as quick and convenient. Presentation in digital form saves the time consuming task of attending a remote location to inspect disclosed documents, of tagging those documents for which copies are required, and of waiting weeks to receive the copies only to find that some requested documents are missing. Electronic access avoids arguments over photocopying costs. It also saves the frustration of reviewing near illegible photocopies.

Securing access to digital files after a project is completed can be beset with difficulties: 'The computer that he/she used has been lost';[7] 'We are missing the backup tapes for that period'; 'The email backups recorded contents of the

7 In *Kingsway Hall Hotel Ltd v Red Sky IT (Hounslow) Ltd* [2010] EWHC 965 (TCC) evidence was said to be lost because an individual's laptop had been sold.

inbox, but not the sent items'; 'We didn't keep backups, because all staff were supposed to keep printed copies'; or 'We've changed systems so access to earlier data is difficult'. Common also is the response (particularly from contractors) that a particular person was employed by a subcontractor and hence fell outside the usual backups systems or was never required to maintain backups. It appears that the importance of maintaining electronic documents – the 'litigation hold' as it is termed in the US[8] – has not yet been fully understood. As Judge Simon Brown QC noted in *Earles v Barclays Bank*, there is no duty on the parties to preserve documents prior to the commencement of proceedings, although after proceedings have begun the situation is radically different.[9]

Greater difficulties arise when attempting to secure access to e-documents held by third parties. Hence, the insurer may wish to obtain digital copies of a loss adjuster's files and emails. An employer may be keen to secure a copy of the files held by the architect, engineer or supplier. The contractor may even wish to see a subcontractor's files. In each case refusals to providing copies of electronic documents are common. In addition to those noted above, a refusal is likely to be based on absence of a contractual provision for supply of documents. Even if documents are provided, invariably they are presented in a form that is far from helpful. Where a party goes into administration or liquidation the data held in servers may be of immense value to parties in related litigation (and may even be the most substantial asset) yet, in my experience, this is rarely noted at the time.

For the construction bar, access to documents is a lifeline. Anecdotal evidence suggests that solicitors already familiar with working with e-documents are reluctant to instruct members of the bar whose preference for paper remains steadfast.

Gaining initial access to e-documents may be easier than securing paper files, simply because they are portable and expensive reproduction costs are not likely to be incurred. Use of e-documents, however, is fraught with difficulty because either the form in which those documents are presented is difficult to use, or the scope of documents presented is unmanageable, or because use of documents can only be achieved *via* a database or web platform. Further issues arise as a trial approaches. These issues are explored below.

Documents in their native form or pdf?

The development of a party's case, the analysis of his claims or his perspective, and review of all relevant 'papers' now involves reviewing emails, attachments, Outlook calendars, and various Word, Excel, PowerPoint and programme type documents. Inevitably, the question arises as to the form

8 The steps of preserving the contemporaneous phone and email records that would support or be adverse to the parties' contentions and retaining them in anticipation of litigation between the parties: 'litigation hold' as it is termed in the US under the Federal Rules of Civil Procedure.

9 *Earles v Barclays Bank plc* [2009] EWHC 2500 (Mercantile), paras 28 and 29; Judge Simon Brown QC reminded the parties that cost sanctions can be imposed, and adverse inferences may be drawn, as a result of failure to give proper disclosure.

in which documents should be made available, whether to one's own side or opponents. Should emails, for example, be made available in printed ('hard copy') form, as pdf files or in their original (or 'natural') Microsoft Outlook form? Should they be available individually or in their native groupings in folders? Similar considerations apply to files in Word, Excel, PowerPoint, or programme files, or drawings.

A difficulty here is that the litigator, dealing with disclosure, may face competing demands to disclose documents in different forms to different groups. A typical usual response is to disclose in a printed form or, failing that, as pdf documents. Disclosure of files in their native form, however, is considerably more valuable, particularly to those instructed as experts.[10] Therein lies a tension at the heart of the e-disclosure debate: litigators are naturally nervous, or may have little experience, of disclosing documents in the form that best benefits those who need to analyse them. The scope for argument between parties – even within one side alone – over the most appropriate form in which to disclose documents is considerable.

Different document forms

It is worth considering the differences between different document forms. Production of hard copy documents made available in their original form was the standard approach to litigation disclosure. If disclosure is limited to those hard copy documents that were located in a client's office, the risk of omission of any digital documents that were never printed is obvious. In the UK the duty to disclose documents under the Civil Procedure Rules now expressly includes e-documents.[11]

PDFs

A pdf document is a digital document in read only format (rather like a photocopy) in a form where none of the underlying data can be manipulated or investigated. Hence, with a pdf copy of an email, the name of the attachment may be apparent but the attachment cannot be accessed. There is little difference between a pdf document and its hard copy equivalent, other than the fact that the pdf document will be easier to carry and comparatively easy to print, if needed in hard copy form. Documents in pdf form can however prove to be of limited use or can be the source of frustration on the part of those seeking to analyse the data being presented:

- A pdf copy of an email may show that a file was sent as an attachment, but the attachment cannot be opened. If eventually one locates a copy of a file that one thinks might be the attachment

10 The Chartered Institute of Arbitrator's *Protocol for E-Disclosure in Arbitration* was published in 2008. It notes at para 8, 'Production of electronic documents ordered to be disclosed shall normally be made in the format in which the information is ordinarily maintained or in a reasonably usable form. The requesting party may request that the electronic documents be produced in some other form. In the absence of agreement between the parties the Tribunal shall decide whether production of electronic documents ordered to be disclosed should be in native format or otherwise.'

11 *Goodale v Ministry of Justice* [2009] EWHC B41 (QB); Civil Procedure Rules Practice Direction 31B, note 2.

because of its filename, one cannot be sure that it is the same version that was sent as an attachment with the email that day.

- A collection of documents or emails are often provided together in a single pdf file. Whether emails or correspondence, the documents cannot easily be rearranged into a different order. They might, of course, be rearranged by printing out all the documents, but that rather defeats the benefit of providing them in a digital form.

- Spreadsheets provided in pdf form often run over many pages. To recreate the original sheet the hapless user needs to print out the pages and tape these back together again. Alternatively large spreadsheets are printed to pdf in a condensed, and therefore illegible, form.

- Pdf documents are sometimes formed by printing a document, adding manuscript pagination, and rescanning the document as a pdf file. Loss of legibility is an issue. Worse, the date of the document will often show the date of printing, not the date (many years earlier) when the document was created. This creates endless confusion as to when versions of documents were generated.

From the above it will be apparent that receipt of documents in pdf form is possibly the least useful, most irritating and time consuming format of all for recipients hoping to analyse the data the original document contained where the document was originally digitally generated and might have been provided in its native form. The current vogue for disclosing documents after printing, paginating, and rescanning to form the pdf file is, it is suggested, burdensome, wasteful, and leads inevitably for a request for the documents to be made available in their native form.

In a more sophisticated form, some pdf files are created with 'bookmarks' which, rather like the contents page of a book, allow the reader to go direct to a particular chapter in the document. Some allow word searches to be carried out within the document. Such searches are more likely to be successful where the pdf document has been created from the native digital file. If the pdf file was created by scanning documents, word searches are more likely to be hit and miss affairs.

Word or PowerPoint

Provision of Word or PowerPoint documents in their native form is useful in that the reader can readily copy data for use in other documents. In native form one can access the document's record history or 'properties'. This allows one to see, for example, when a document was first created or possibly the identity of the author, a feature which, at times, is revealing. PowerPoint documents may also contain speaker's notes which were intended for the speaker but which were not available to the audience.

Excel

Excel documents in their native form (.xls or .xlsx files) typically contain many sheets and formulae linking cells within sheets and between sheets. Those preparing Excel documents commonly produce a top spreadsheet with the intended data for presentation with (on other sheets) all manner of calculations, measurements and internal notes that were never intended for presentation. The contents of that 'hidden' data on the additional sheets, again, can be revealing. Whatever the data it contains, adjudicators, arbitrators and experts will often need to make calculations or to present data by adjusting the data in the disclosed spreadsheets. In those circumstances access to the Excel file in its native form is essential if some of that data is to be analysed or cut and pasted for reuse in other documents.[12] Where adjudication is commenced involving a contested final account, it is becoming more common for adjudicators to request at the outset a copy of the summaries at least, and perhaps also the backup papers, in native Excel form.

Programme files

For Programme files, such as those produced by Microsoft Project (.ppt), Asta PowerProject or Primavera, similar comments to those for Excel files apply. Experts will invariably need to have the files in native form for the original programmes to be properly interrogated and understood, or to allow use of the data in those programmes in new calculations or programmes. Pdf copies of a programme simply do not provide access to the underlying data. Working from a PDF copy is a time consuming and costly exercise, and one that involves educated guesses at the contents of the underlying calendar files, logic restraints, etc.[13]

Emails

Emails, if generated or received by Outlook compatible software, are particularly valuable when available in native form. A copy of an individual's entire inbox can be made in minutes and saved in a single file (.pst) on a CD or memory stick. The attractions of the data in that form need hardly be emphasised. By copying the data into any Outlook programme the original folders and subfolders will be retained; attachments can be accessed; data can be rearranged by date, attachments or sender; searches can be carried out across all emails; and each email can be previewed allowing very rapid review of a large number of emails. It is not difficult to work through 1,000 emails in this format in one sitting. Perhaps the greatest benefit to reviewing emails in

12 In a recent adjudication in which the author was involved as expert, the adjudication concerned valuation of a final account. The adjudicator asked both parties (before the Response had been filed) for all documents, particularly spreadsheets, to be filed in native form, so that the adjudicator would avoid incurring the expense of developing his own new spreadsheets, retyping all the data, for his own calculations. Both parties immediately acceded to the request.

13 See for example, *City Inn Ltd v Shepherd Construction Ltd* [2007] ScotCS CSOH 190, para 27, where a delay expert was noted as having attempted to recreate the contractor's programme because the digital version of the programme was 'lost'. Neither expert was able to recreate the programme fully.

this format is that it becomes possible to identify, from the way filing is arranged, which folders of emails are less relevant. The one difficulty to note is that keyword searches in Outlook will run through the emails but not though the attachments.

Working with emails in pdf form gives rise to difficulties that do not arise with other documents:

- When provided with emails in pdf form, it is difficult to identify immediately whether the data provided is comprehensive. This arises because emails are generated and stored under individual email accounts. Hence, development of a list of key individuals involved in a project, and their roles, provides a useful check on whether the individual's emails are disclosed. Difficulties can arise where, for example, one is provided with the inbox for identified individuals, but contents of the 'sent items' folder for those individuals are accidentally omitted.
- It is difficult to follow trails of emails; attachments might be noted, but will typically not be provided. Further, the emails will typically be presented chronologically. Hence, where once an individual had stored emails in a collection of discrete folders, one no longer sees the documents in those folders but instead sees a jumbled compendium, much of which will appear irrelevant.
- Some businesses, under their IT policy, encourage employees to remove attachments that are sent and received with emails and to store those attachments in separate folders.[14] When emails are later made available in litigation (whether in pdf form or native form) the absence of attachments might not at first be obvious.[15]
- Emails provide a very valuable record of work in progress. Where, for example, a cost plan is under development, in the past the only evidence available was either the finished printed product or whatever drafts were printed out. On the other hand, emails record drafts, record comments between colleagues on those drafts and help see how documents were compiled. The filename of the cost plan may never change, but different versions may be available as attachments to emails over time.
- Emails involve two or more individuals, and emails are frequently forwarded or replies are made. This interconnectivity makes deletion of emails, or attempts to hide potentially damaging emails, difficult. Omissions from disclosure are more difficult to detect if the emails are disclosed in pdf form.
- The collection of all emails arising at or after a particular event (like termination) can reveal the internal rationale for actions

14 The usual reason for the policy is to reduce the volume of data held within the email system.

15 The record of the deleted attachments is retained in metadata. Some more sophisticated litigation support systems will show the filename of omitted attachments.

taken. If emails are available in native form, the collation of analysis of data can be carried out very quickly indeed.

Benefits of disclosure in native form

For experts, the availability of documents in native form can provide several benefits. The source data can provide insight into the date of creation, author of a document, formulae, notes and calculations.

Data from the native form can be copied for re-use elsewhere. This is of immense value in final account disputes where revised calculations are required or where it is beneficial to set out a respondent's position next to the claimant's case. The worst possible position for an expert is where the entire recreation of spreadsheets is required simply because data in the native form was not made available.

Speed of review in native form is typically faster than review in paper or pdf. It is not unusual for a witness of fact, or an expert witness, to be asked to reconsider a draft statement after finding a fresh batch of several thousand emails. Reviewing those emails and making amendments can be achieved within a matter of days if the emails are made available in their native form.

The provision of data other than in paper form can bring some surprising results. In digital form, it is possible to find the proverbial needle in a haystack. In one dispute concerning defects with which I was involved, an issue arose as to whether the contractor had employed a particular subcontractor for some work. The contractor claimed to have lost records of the work. After many months of claim and counterclaim, the contractor agreed to provide a copy of its entire cost ledger. The data, which comprised some three years accounts, was exported into an Excel spreadsheet, and sorted by date and supplier. Two hours after provision of the data is was clear which suppliers and subcontractors had been engaged, thereby disproving the claim made. There was no cost involved in providing the data. Had that data been provided in paper form, the same analysis might have taken several weeks, and might not have succeeded at all.

The form[16] in which documents are made available has significance beyond mere debate in disclosure. It affects the cost of research and speed of analysis. A commonly occurring difficulty is that a party will provide its own witnesses and experts with data (particularly emails) in native form, only to find that the documents are disclosed to the other party in pdf form. In discussions between experts, the expert with access to documents in native form, and who is familiar with the benefits of analysis based on documents in that form, may be at a huge advantage. Further, experienced litigators and experts have become more used to provision of documents in native form and are coming to expect this as the norm. It will, in future, be progressively harder for parties to argue that disclosure in pdf form will somehow suffice, as experience of disclosure in native form, with the benefits that brings, becomes more widespread. For these reasons, in coming years, applications to tribunals and

16 Meaning the filetypes (.doc, .xls, .pst, etc) and how those documents are arranged.

courts relating to the *form* in which documents are disclosed are likely to be seen with greater frequency.

Scope of disclosure

Complaints about the scope of disclosure are not new and are not limited to construction litigation.[17] In my experience there are three areas of contention:

(i) The volume of documents is too large[18]

This complaint is usually founded on a number of arguments: the excessive burden on the opposing party to review the documents; irrelevance of much of the material; the burdensome cost of printing the disclosed documents for experts. These complaints, in my experience, are usually founded on the basis that one or either party intend to deal with the documents on a paper basis. If reviewed digitally, the complaints should fall away.

This might be explained by analogy, reviewing the processes adopted when purchasing books. The search for, say, a particular novel does not begin by working diligently from the first shelf in the bookstore and proceeding shelf by shelf through the entire store. Instead, one might wander through the store to find the fiction section, then narrow the search by locating authors commencing with the letter C, etc. Alternatively one might obtain the classification index number for the novel in question and search through numbers on shelves which help to isolate the relevant shelf, from where the book is quickly located. Does it matter, in this context, whether the bookstore contains two thousand or two million books? It does not, provided one has a means of searching, rather than having to work progressively through the entire library shelf by shelf.[19] The search might be *via* an index or classification system. It seems to me that the same principles apply to disclosure. Finding documents quickly depends on having some reliable search system. The skill lies in the identification of the categories of documents involved, the names of the key individuals and having a subject matter (or perhaps a time period) in mind. One also needs some search mechanism. Without these elements one is left in the near impossible position of working though vast documents, rather like the novice bookstore visitor. If one can find the documents with an efficient search mechanism, it should not matter that many of the documents are 'irrelevant', in much the same way as most of the contents of the library are 'irrelevant' to the user.

One consequence of a large disclosure, in my view, will need to be acceptance that an expert might not have read the entire disclosure. When faced with a very large e-disclosure, it will perhaps become more important for the expert to show that a wide range of searches were made and that all reasonable lines

17 Lord Justice Jackson, *Review of Civil Litigation Costs: Final Report*, 2010, Chapter 37, Disclosure, pages 364-374, available at www.judiciary.gov.uk.

18 See for example, *Elliott Group v GECC UK* [2010] EWHC 409 (TCC), where one party sought an adjournment because the volume of electronic disclosure was greater than anticipated.

19 A third, more modern approach, would be to purchase the book online, either buying the hardcopy edition or an e-book download to an e-reader such as Kindle.

of enquiry were adopted. Such an approach, it must be admitted, will only be possible where searches of e-documents can be carried out. It would not apply as readily where the disclosure is in paper form only.

(ii) Duplication

Complaints are frequently made by experts and by opposing parties that the disclosure is loaded with duplications of documents.[20] Litigation support firms, in response, encourage vast 'de-duplication' exercises. These complaints, in my view, are often misplaced.

In my experience, many of the so-called duplicate documents will be attached to different emails. Filenames may appear similar but contents may differ. Alternatively, the contents of emails to which those documents are attached will differ and, crucially, will provide some explanation as to what changes have been introduced between different versions. Such explanations can be very revealing, particularly where the drafts of claims, and comments on the relative merits of claims, are evident in emails. Some, but not all of those emails will have been forwarded to others, with attached comments, and might form part of a chain of emails. In my experience attempts to remove duplication is exceedingly time consuming and results in the destruction of original, and valuable emails, much of which is reinstated at a later date at further expense.

(iii) Difficulty locating privileged material

The related complaint is that it is hard for solicitors to isolate and weed out privileged material. An advantage of searches through digital material is that detailed searches can be carried out at extraordinary speed, rather like a Google search. My experience suggests that locating privileged material by content search is a time consuming and largely fruitless task. Considerably greater success is achieved by searching for emails to and from individuals to whom or from whom privileged material may have been addressed. Hence, identification at an early stage of the names of in-house and external legal advisors will be important.

Elimination of privileged material can, however, be difficult as material may be buried within emails and attachments that have been forwarded, replied to, etc. As Professor Sommer notes: 'There will be enormous challenges when one party wishes to redact material on the basis that it is privileged, confidential, or outside the scope of Standard Disclosure … all the material is inextricably linked.'[21]

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20 See for example, *Vector Investments v Williams* [2009] EWHC 3601 (TCC) where criticism was made of disclosure containing duplication. Coulson J noted (para 90), albeit in a case involving paper based disclosure, '... where there are large volumes of documents, I consider it is essential for the parties to discuss the scope and extent of disclosure in advance. It is regrettable that this did not happen in this case'.

21 Professor Peter Sommer, Society of Computers and Law Magazine, Vol 19 (2009) Issue 5, page 13.

Difficulty listing e-documents for disclosure

With greater disclosure comes the complaint of the additional burden of listing documents. This is a significant source of contention only, in my experience, where one party attempts to review the disclosure entirely on a paper basis, whilst the other party proceeds on an electronic basis. Listing of documents is simply not required (and can be difficult and time wasting) when the documents are being reviewed electronically.[22]

Regardless of the scope of disclosure, the approach adopted to listing electronic disclosure is likely to be contentious and subject to much variation. From personal experience, as a user, a list of emails is of little assistance at all. A list of those individuals from whom files have been sourced is, however, of considerably more value. One of the attractions of electronic documents is that file lists are generated as a matter of course, whether in a Windows Explorer type file or Outlook or proprietary system. There seems little need to create any additional lists, less still lists which merely seek to show the same data in a different presentation.

The courts, e-disclosure and Practice Direction 31B

Cases dealing specifically with e-disclosure first appeared in 2007, covering disputed applications for specific disclosure and wasted cost orders:

- In *Digicel v Cable & Wireless*, over 1 million documents were provided to lawyers.[23] After much rationalisation (at a cost of over £2m) and by searching for 'keywords', only 5,212 documents were disclosed. In an application for further disclosure the court ordered that certain backup tapes should be restored and that further searches relating to specific individuals and time periods should be carried out. The court was critical of the parties' failure to agree which keywords should be used in searches or to seek an early court determination relating to the scope of disclosure.

- In *Abela v Hammonds*, no electronic disclosure was offered by Hammonds because they said they had a policy of printing all emails, so there was no point in their provision electronically.[24] The court disagreed, ordering co-operation between the parties and requesting that further reasonable searches be undertaken.

- In *Goodale*, Senior Master Whitacker's judgment notes in some detail the changes in the way documents are being created by email and the importance of treating digital files as part of the documents to be disclosed.[25] He emphatically noted that it was

22 Interestingly, under the new Practice Direction, disputes of this type should not occur as the solicitors are expected to have resolved matters in advance by discussion and co-operation.

23 *Digicel (St Lucia) Ltd v Cable & Wireless Plc* [2008] EWHC 2522, [2009] 2 All ER 1094 (Ch).

24 Chancery Division Claim No HC07C01917, Lawtel, 2 December 2008.

25 *Goodale*, note 11.

wrong for the Ministry of Justice not to disclose electronic documents in the case. The court did not order 100% disclosure of material available but suggested a staged approach, searching first for documents relating to certain individuals, with a review thereafter to see if that was sufficient.

Two recent cases have concerned abortive costs being incurred because of a failure to disclose some key electronic documents. Each concerned a request for a wasted costs order. In *Hedrich v Standard Bank* the Court of Appeal confirmed that no wasted costs order should be made because the solicitors did not realise that some documents were not disclosed.[26] In *Earles v Barclays Bank* the non-disclosure resulted in unnecessary litigation with the result that a 50% cost penalty was made against the non-disclosing party.[27]

From these cases a number of points emerge:

1. The fact that it might be too expensive to carry out searches to find, or retrieve from backup tapes, electronic documents is not a good defence. In *Earles* no search was carried out because the electronic documents were thought to be of marginal relevance and it would be disproportionately expensive to search. The judge was highly critical of this approach, suggesting cost sanctions would be appropriate where inadequate disclosure had been provided.

2. It is not a good defence to say that no search is necessary because emails were all printed (*Abela*) or that the defendant did not want to carry out a search (*Goodale*).

3. The court in *Earles* moved away from reliance on keyword searches and towards a more staged approach to searching for documents relating to key individuals or time periods. This point has now been noted in Practice Direction 31B.

On 1 October 2010, Practice Direction 31B for disclosure of electronic documents was issued. This has been introduced to regulate the approach practitioners should take when considering material relevant to a case which is stored electronically. In particular it aims to focus the parties on the sources of electronic material and give guidance to those with less experience of dealing which such issues. The Practice Direction applies to all multi-track cases. It incorporates a questionnaire designed to assist the parties in identifying the scope of electronic disclosure required, encouraging parties to discuss and agree the extent of 'reasonable searches' and how disclosure should be given.

By encouraging early co-operation between the parties, the Practice Direction is, in reality, a consolidation of the indications that had been given by the courts, and follows practice that had been used for some time on large scale litigation. The practical effect of this is that failure by parties to co-operate or

26 *Hedrich v Standard Bank London Ltd* [2008] EWCA Civ 905.
27 *Earles v Barclays Bank*, note 9.

to deal appropriately with electronic documents in disclosure is more likely to lead to wasted costs orders.

From a combination of case law and the Practice Direction, the approach by the courts to the burdens of dealing with large scale disclosure might be summarised as follows:

First, the TCC in particular will readily look at the relationship between the underlying dispute and the documents in question. In *Elliott Group v GECC* for example, an adjournment was sought due to difficulties in dealing with an unexpectedly large number of electronic files.[28] The adjournment was not granted because, in part, the files were thought unlikely to be of significance to the defects in issue.

Second, the courts appear to be lending support to staged disclosure. Hence, as reported in *Goodale*, the disclosure might relate only to email accounts for a limited group of individuals, with the option of further disclosure thereafter if the court agrees that is necessary. In *Berezovsky v Abramovich* an enhanced disclosure order was sought. The argument advanced was that staged disclosure was inherently inefficient because it would require solicitors to review the entire disclosure each time a new train of enquiry was made. The argument did not succeed. Mrs Justice Gloster DBE said:

> '... if any order for enhanced disclosure is to be applied for, the applications should be focussed, directed at an identifiable category or class of document and linked to specific issues, not broadly aimed at the whole gamut of issues as presently is the case with the Claimant's application. Moreover some explanation should be provided as to the nature of the enquiry envisaged.'[29]

Searches, keywords and document management systems

There are a number of approaches that might be adopted to review e-documents, each of which is not without difficulty:

Print and read

Five disadvantages with this approach might be suggested. First, some documents will never have been printed. The difficulties inherent in printing multi-sheet spreadsheets should not be underestimated. Second, printing breaks the link between emails and attachments. It will rarely be easy to identify filenames on documents after printing, making more difficult all referencing. Third, if instructing solicitors have provided files in digital form, their continued use in that form might be expected, particular where collections of documents need to be uploaded into the document management system. Fourth, printed documents cannot be accessed online from remote locations once the reviewer has left the office. Fifth, and most significantly, one cannot run electronic searches through printed materials.

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28 *Elliott Group*, note 18.

29 *Berezovsky v Abramovich* [2010] EWHC 2010 (Comm), para 12(iv).

Review files using Windows and Outlook

This approach is adequate on small matters, provided that the reviewer understands the limitations of searches of scanned pdf documents or email attachments through the software being used. Receipt and review of files in Outlook (provided the emails are held in their original file structure) can be commenced at very short notice, at very low cost,[30] with the benefits that basic searches can be carried out and data cut and pasted to an Advice or report.

Use a document management system

Typically, documents are handed over to a litigation support service provider or 'host provider' who manages the documents, allowing these to be viewed online *via* a web link. Alternatively a law firm buys a licence to use a propriety system and receives external support and assistance. In the past, the capability of document management systems was very limited. Each document was scanned in and reference with a few 'keywords'. Searches for certain 'keywords' would yield that group of documents with those referenced words. These old systems have now been superseded by later versions with vastly increased capabilities that can accommodate all documents in native and pdf form and which allow searches through every word of every document, much in the same way that a Google search operates across the web. This has been used as a technique to identify the relevant documents and, from that, to define the scope of the disclosure. As noted below, carrying out searches of e-documents on document management systems has come in for much criticism.

Document management systems tend to be offered by commercial service providers on a hosted or a licence basis.[31] A fee has to paid to the service provider to set up the system for the particular matter in question, coupled with further ongoing charges. Hence, use of these systems is least likely where the prospect of imminent settlement of a case is high. The extent of trust necessarily placed in the host service provider is very high.[32]

For the systems that are web based, the data is held and processed on a central server. Users accessing the website view the *results* of their searches – they do not have to download files or documents at all, but merely view them. Accordingly the searches can be carried out and documents inspected at great

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30 In one case, I was asked to update a report after receipt of a CD with some 11,000 emails. The emails, all in their original Outlook files, were loaded into Outlook. The entire exercise, from receipt of the CD, review of the emails and updating the report, was achieved within six days.

31 Technology systems and providers include Autonomy, Nuix, Epiq, Westlaw Caselogistix, Equivio, FTI, LexisNexis Applied Discovery, Recommind, Clearwell, Kroll and Millnet. See those listed for example on Chris Dale's e-Disclosure Information Project at http://chrisdale.wordpress.com/.

32 Collapse of the provider is a risk that must be considered. See *Brookfield Construction (UK) Ltd v Mott McDonald Ltd* [2010] EWHC 659 (TCC), para 39, were the liquidation of an Australian litigation support firm was said to have caused additional disclosure costs to be incurred. Coulson J noted 'It seems to be a feature of this sort of litigation that electronic document management is farmed out to other firms, which seems to me to be an unfortunate development, and one which is likely to increase costs unnecessarily'.

speed from a remote computer. Access is available 24 hours a day, from any place that has web access. Hence work over the web can be carried out day and night, from an office, home or on holiday abroad, providing web access is available. This represents a major change to the way work can be carried out. As I have experienced, immediately after appointment as expert on a large matter, some 120,000 documents were available for inspection and analysis. This dispensed entirely with the need to carry out an inspection of documents at a remote site, and no time was lost awaiting receipt of copies.

There are a number of significant benefits to reviewing documents *via* a web based or server based document management system:

- Where documents have been provided in their native form, they can be viewed in their native form *via* the document management system. Hence, where spreadsheets were attached to an email, all the detail of formulae and worksheets in the spreadsheet could be reviewed and data from those spreadsheets could be searched and copied.
- The entire database of documents can be searched quickly. The strength of document management systems is that the entire database of documents can be searched for a particular word or phrase or name, and the search will be carried out within the text of every word document, spreadsheet, attachment, email etc. A corollary of this is that the successful use of systems depends on the user developing skill in carrying out complex or multiple searches. This makes it possible to find the proverbial needle in a haystack provided one is skilled at undertaking searches and has an understanding of how construction project files and communications are typically generated and run.
- Modern document management systems contain features that allow the results of searches to be saved, tabbed and labelled, facilitating review and refinement at a later date.
- It is easier to identify privileged material when using a document management system.[33]
- The linkage between documents and emails is retained. Hence, for any document, it is possible to see the email to which it was attached and vice-versa. This provides an incredibly powerful basis for tracking how claims were developed from their inception, for example; or the emails can provide explanations as to why documents are being amended. Parties (and their experts) can suffer a severe disadvantage if they attempt to work on printed documents only.

33 In a recent matter with which I was involved there was confusion as to whether privileged documents remained in the disclosure. By identifying the names of in-house lawyers involved, and searching for those names, all remaining documents linked to or referring to those individuals could be quickly isolated, thereby locating the privileged material.

Keyword searches, whether carried out in Outlook or in a complex document management system, if undertaken without considerable care and under a number of iterations, may prove unreliable for many reasons.

It is not always easy, and can be very difficult, to carry out searches for documents in a way that might have been carried out with paper based documents. A search for the minutes of each monthly site progress meeting, for example, would traditionally have been easy, as they would have been printed out and filed in a lever arch file marked 'site meeting minutes'. Today there is a risk that meeting minutes will be emailed to attendees but not otherwise filed. Unless an individual has specifically saved those meeting minutes as a group of documents, and that same group of documents is retained as an identifiable group within the document management system, it becomes necessary to search across the entire database for those meeting minutes. That can provide a very large list of potentially relevant documents which requires refinement to find minutes of a particular meeting. In reality, this is not a failing of the document management system but, more usually, it is simply that architects, engineers, site managers and staff are today less likely to save copies of, say, progress meeting minutes in one place.

Searches can return a large number of documents, leading to either an extensive review of the selection found, or repeated attempts to refine the selection. In my experience, a large number of searches may need to be run, using various configurations, to identify documents relevant to particular issues.

Because searches work across all documents, unexpected returns are inevitable. A search for '10 Jan 2010' would return all documents emails sent and received on that day. But it may also return any document that referred in any place to that date, including programmes, accounting files, meeting minutes, reports, specifications etc.[34] Equally, depending on the document management system being used, a search for '10 Jan 2010' would probably not return a document where the date was stated to be '10 January 2010' or '10/01/10'. These complications multiply when emails are sent from other countries that use different date formats or show dates in their home language, and where the disclosure is made up of pdf documents rather than those in native form.

In carrying out searches, there is a danger of what behavioural economists term 'confirmation bias'.[35] This is that we tend to seek documents, inadvertently, to confirm a bias. Confirmation bias gets reinforced by over reliance on specific searches. There is a reduced prospect of alighting upon documents that may be of considerable interest or relevance, or which may give a contrary view, but which fall outside these searches. By way of analogy, many library users identify books of interest by causal browsing.

34 This difficulty might not arise at all where emails are disclosed in their native form, but will arise if disclosed in printed or pdf form.

35 In psychology and cognitive science, confirmation bias (or confirmatory bias) is a tendency to search for or interpret information in a way that confirms one's preconceptions.

Bookshops base sales strategies on a similar premise. The use of specific searches reduces browsing.

Individuals who are not skilled at carrying out searches may feel somewhat helpless and in the hands of other colleagues, or others (perhaps experts), upon whom they must rely to find documents. An analogy might again be drawn to the library user that relies entirely on the librarian to find books. It is suggested, in view of the foregoing, that attempts to limit the number of documents disclosed in construction related litigation by use of keyword searches is unlikely to be a reliable approach. Searches based on known individuals, however, is less likely to miss key documents.

Overall, management of documents *via* an outsourced management system is complex. It involves those running cases (whether in-house or solicitors or members of the bar) liaising directly with host providers (whether an in-house IT team or external provider). Many litigators and experts find IT-related issues complex. In response, some law firms have developed in-house expertise to handle e-disclosure and electronic case handling. Whether the expertise is IT based or based on legal training, a greater involvement by IT specialists in document handling and case management can be expected. The greater involvement of IT professionals (potentially with some direct client interface) and greater consideration of IT requirements can be expected to change, in part, the practice of construction litigation in UK and large scale international construction arbitrations.

It is tempting to think that the increased availability of technology should improve construction litigation. In other fields, the increased availability of technology has made little difference.[36] In my experience, time needs to be spent practising and developing searching skills to use litigation document management systems in a way that will be beneficial. Different ways of working are required: if documents are viewed on screen, a second monitor or second computer may be required for note taking.

Use of e-documents at trials and hearings

The use of electronic documents, whether in their native form or *via* a document management system, extends the range of analytical work that can be carried out by solicitors and experts, particularly when trying to establish and flesh out the factual matrix. As the trial or hearing approaches some different considerations apply. As is well known, counsel have a strong preference for working with paper documents. There may be a marked reluctance to use a document handling system. Even if that reluctance can be overcome, a paper bundle will be required in any event for trials before courts

36 One US study showed that despite very high usage by young people of news sections of social media sites, their understanding of political issues was no greater than for older people who did not use news websites. The study found that increased availability of technology did not increase knowledge, and that this group were accessing news seeking confirmation for views already held. Study by Jody C Baumgartner and Jonathan S Morris, East Carolina University, published in Social Science Computer Review: http://ssc.sagepub.com/content/28/1/24.abstract.

in England and Wales. Adjudicators and other tribunals may be more willing to accept documents and run hearings entirely on an e-working basis.[37]

Preparation of a chronological bundle in paper form from electronic documents can be an immense undertaking. First, many of the documents will never have been printed before, so printing can prove difficult because of the need to set formatting. Second, confusion inevitably arises as to what exactly is to be printed. If an email is required, should the attachments be printed also? If spreadsheets are required, how many of the tabbed sheets should be printed? At what scale should they be printed so as to be legible? Third, is it possible for the law firm to print documents or does this task need to be carried out by the host document management service provider?

Referencing is a further area of potential difficulty. When preparing witness statements or an expert report various documents will have been referenced, noting their source. The source may be a document reference in the document management system which is needed to locate the documents involved. Those references may be superseded by trial bundle references. Worse still, the opposing party may have entirely different referencing systems, with the result that opposing experts refer to similar documents using different reference numbers, each relating to their own document management system. This can delay completion of experts' reports and preparation of counsel's skeleton opening. A typical solution is to develop a third, new, referencing system for the trial bundle. This can result in documents having two or more references.

At trial, it is likely that some participants will retain a preference for working on-line (to retain the benefits of working with an integrated and searchable database), whilst others will prefer to work from paper files. Some may work on both systems concurrently. It is notable that the Singapore International Arbitration Centre anticipates, and will support, the conduct of hearings entirely on an electronic basis. It remains to be seen whether that Centre is seen to be more attractive for that reason alone, rather than courts in the UK which currently prefer paper based trials.

Even where hearings before English courts do proceed on the basis of electronic documents, those documents are (at the time of writing this paper) required to be in pdf form, with bookmarks. That requires conversion of the trial bundle documents from their native form, or paper form, to pdf files. That conversion is time consuming. It is unlikely to significantly save either costs or paper. Ironically, this leads to further duplication, as copies of documents can be available in both native and pdf formats.

A look to the future

The challenges presented by working with electronic documents are not unique to the TCC or English courts.[38] Similar issues are being faced by the

37 In a recent adjudication with which I was involved as expert, the adjudicator asked the respondent, before the response was provided, to provide all claims for compensation events and recent valuations in digital form.

38 Two websites hosting much detail on e-disclosure are Seamus E Byrne's Australian website 'In Pursuit of Relevance' at www.elitigation.com.au and Chris Dale's, note 31.

International Chamber of Commerce tribunals, domestic and international arbitrators and courts in other countries.[39] In Australia, a court practice direction relating to electronic documents has been issued and a significant inquiry into disclosure laws, with specific reference to electronic documents, is being undertaken by the Australian Law Reform Commission.[40] Much technological development now underway is aimed at the greater use of technology for the early evaluation of cases.

In a collection of predictions relating to e-disclosure, the Society of Computers and Law noted, in early 2010: 'The use of paper, with scanning and coding requirements, will continue and show no signs of abating no matter what suppliers and commentators say'.[41] That is a useful reminder that the pace of migration to the use of digital documents in litigation will not be as fast as technology suppliers might like. A preference for working with paper prevails.

Working with e-documents is, in many respects, a great deal more difficult than working with paper because of the need to rely on electronic searches. If mastered, the benefits of working with e-documents are very considerable, extending the depth, accuracy and poignancy of forensic investigations. A review of e-documents can be carried out anywhere, at any time, with a laptop and Wi-Fi access. However reluctant some lawyers may be about working with e-documents, the time is approaching when the material with which litigators, experts and courts are asked to work will not be in any other form.

The view expressed by some is that e-litigation provides significant efficiencies and benefits. That view, it is suggested, needs to be tempered with the understanding that, to achieve those benefits, skills may need to be acquired or developed and changes in working practices implemented. Those less equipped or less familiar with working predominantly on a paperless basis – e-working – may, in time, find themselves at a comparative disadvantage to those whose skills are more developed. That observation applies as much to our courts and tribunals as it does to litigators and experts.

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39 Singapore's Practice Direction 3 was passed in 2009 covering electronic disclosure. Singapore's Electronic Practice Directions were launched in 2010 with a view to providing full electronic working in its courts.

40 See http://www.alrc.gov.au/inquiries/discovery.

41 'E-disclosure Predictions in 2010', Society of Computers and Law Magazine, Vol 20, Issue 5, page 30.

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in the construction industry'

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