Innovative protocols and technologies as a means of complying with the Building and Construction Industry Security of Payments Act 1999 (NSW) Australia

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The Building and Construction Industry Security of Payments Act 1999—updated 27 November 2003, New South Wales, Australia provides a statutory framework which governs compulsory progress payments for those who undertake works or provide goods or services as part of a construction contract. Respondents to the process are being disadvantaged as a result of complying with the Act. Claimants are purported to be taking months to prepare detailed and comprehensive payment claims, prior to serving them on the respondents, who, under the Act, have limited time to compile a detailed payment schedule in response. This research investigates the use of two recent innovations that could assist in the administration of the process. The first is the Society of Construction Law’s Delay and Disruption Protocol’s model clauses, and the second is the use of web-based technology as a project administrative tool. A literature search was carried out, together with semi-structured qualitative interviews, to determine opinions of their use and effectiveness. Results indicate a recognition and appreciation of the likely benefits of transparency, efficiency and improved cost effectiveness of the project administrative processes, possibly resulting in potential savings and improved cost recovery opportunities, with the potential to reduce and/or avoid disputes.

Keywords: Payment, contract administration, documentation, claims

Introduction

The Building and Construction Industry Security of Payments Act 1999—updated 27 November 2003 (the Act) (NSW Government, 1999), Australia, provides that anyone undertaking construction work or supplying related goods and services (with the exceptions of those stated in Part 1, s. 7 of the Act) in New South Wales (NSW), Australia, has a statutory right to receive regular progress payments from each reference date (Part 2, s. 8(1)), regardless of whether the relevant construction contract employed makes such provisions. The Act has been described as an interim quick solution to progress payment disputes (Fisher, 2005), and is meant to minimize or eliminate the persistent problem of late or no payments that most parties in the construction industry, who perform construction works or supply goods and services, experience (Brand and Uher, 2004). The Act is meant to redress the balance by placing the claimant on a more even footing with the respondent (Davenport, 2004). Based on the United Kingdom’s Housing Grants, Construction and Regeneration Act 1996 (Uher and Davenport, 2005), the Act allows a claimant to serve a payment claim in the time period determined by or in accordance with the terms of the contract (Part 3, s. 13(4)(a)) or within 12 months after the construction work or the supply of the related goods or services was carried out (Part 3, s. 13(4)(b)), whichever is the later, whilst also limiting the time available for the respondent to prepare a payment schedule in response to the progress payment claim (Part 3, s. 14) before adjudication takes place (Part 3, s. 17).

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Davenport (2005) has stated that respondents are being disadvantaged as a result of these provisions due to the limited time available for preparing a response to a payment claim. A recent court decision (Coordinated Construction v. Hargreaves [2005] NSWSC 77), which enables the inclusion of claims other than progress payments to be determined by the adjudicator under the Act, has complicated the matter further. Analysis of past adjudication determinations has shown that claimants have a high probability of success of being awarded either the full or a partial amount of a payment claim (Brand and Uher, 2004). The lack of adequate site records documenting the project could be a contributing factor to this. The construction process is known to be complex (Pickavance, 2000). The industry has a perceived reputation of being notoriously poor at documenting procedures and transactions, with the documented information kept being of a cost accounting nature rather than for the assessment/validation of claims (Vidogah and Ndekugri, 1997). This, together with the limited time available under the Act for the retrospective identification, collection, validation and collation of the information available, often from incomplete project records and disbanded project teams, hinders the respondents’ ability to compile a comprehensive payment schedule in response to a payment claim. The result is that a claimant can ‘ambush’ a respondent. Under the Act, it is permissible for the claimant to take up to 12 months to prepare a detailed payment claim, fully supported with comprehensive documentation, possibly with the assistance of legal representation. This could then be served upon the respondent, often at a time that is the most inconvenient and disadvantageous to the respondent. The limited time available to the respondent for sorting, abstracting and corroborating information from disorganized, outdated and scattered project records (which are seldom in a format suitable for this use) as a defence to the payment claim exacerbates the problem further. Typically the standard forms of construction contracts employed rarely contain detailed provisions stating what records should be kept, what form they should be kept in and how regularly they should be updated to reduce or eliminate such problems.

In October 2002 the Society of Construction Law (SOCL) published a Delay and Disruption Protocol that contains model clauses (for inclusion in the contract specification) that comprehensively details the types, forms and periods of updating of project records for the purposes of providing suitable project documentation to assist in delay and disruption disputes. The information collected (and the format it would be in) would be ideal for use in the compilation of both a payment claim and a payment schedule. The manual application of the model clauses would do little to improve the respondents’ ability to compile a payment schedule in response to a payment claim in respect of the time provisions of the Act. The application and use of web-based technology (WBT), where the same project information (historic and updated) would be available to all parties instantaneously, in an appropriate format, could provide an effective and efficient means of overcoming this.

The aim of this research was to investigate the use and application of the protocol’s model clauses and WBT as a means of equitably administering a construction project and complying with the requirements of the Act.

The Act

The Act ensures that a claim for regular progress payments can be made from each reference date. The reference date is defined in accordance with the terms of the contract (Part 2, s. 8(2)(a)) or if there is no express provision, it is the last day of the named month in which the construction work or the related goods and services was carried out or first supplied, and the last day of each subsequent month (Part 2, s. 8(2)(b)). The Act effectively bans ‘pay when paid’ clauses (Davenport, 2000) and defines a procedural mechanism for the:

1. issuing of a payment claim by the person claiming payment;
2. provision of a payment schedule by the person from whom the payment is payable;
3. referral of any disputed claim to an adjudicator for determination; and
4. payment of the progress payment so determined (Part 1, s. 3(3)).

Time provisions

Part 3, s. 13(4) of the Act enables a claimant to serve a payment claim within the period determined by or in accordance with the terms of the contract, or within 12 months of the date from when the construction work or the supplying of the related goods and services was carried out, whichever is the later. A simplified diagrammatic representation of the process required by the Act is illustrated in Figure 1.

The respondent may reply to the claim by providing a payment schedule identifying the payment claim to which it relates, and the amount of payment the respondent proposes to make, within the time required by the relevant construction contract or within 10 business days after the payment claim is served (Part 3,
s. 14), otherwise they are liable for the whole of the amount claimed (Part 3, s. 15).

Part 3, s. 17 of the Act outlines the adjudication process and creates three possible time periods for an adjudication to take place, as illustrated in Figure 2.

The claimant can make a written application for the adjudication of a payment claim if the respondent has provided a payment schedule in respect of the payment claim which:

1. is less than the amount claimed (Part 3, s. 17(1)(a)(i)), and must be made within 10 business days after the claimant has received the payment schedule. Payment is due 10 business days after the claimant has served the payment claim on the respondent;

2. fails to pay the whole or any part of the scheduled amount by the due date (Part 3, s.
Figure 2  Time provisions as stated in the Act
Security of payments

and the supply of goods and services to be valued:

Part 2, s. 10 of the Act requires the construction work
Valuation provisions

taken the claimant up to 12 months to compile.
schedule in defence of a payment claim that may have
from their project records to produce a payment
has a limited period to collect and compile evidence
to collect and provide evidence for their response to the
earliest opportunity to maximize their possible payment

The authorized nominating authority must refer the
application to an eligible adjudicator (Part 3, s. 18) as
soon as practicable (Part 3, s. 17(6)) and it must be
accepted by the adjudicator within four business days
from the date it was received by the nominating
authority (Part 3, s. 26(1)) otherwise the claimant can
withdraw the application and make a new one (Part 3,
s. 26(2)).

If a payment schedule has been provided within the
specified time (Part 3, s. 20(2A)) the respondent may
lodge an adjudication response with the adjudicator
within five business days of receiving a copy of the
application (Part 3, s. 20(1)(a)) or within two business
days after receiving the adjudicator’s acceptance of the
application (Part 3, s. 20(1)(b)), whichever is the later.
The adjudicator is to determine the adjudication within
10 business days after the date of notifying the claimant
and respondent of the acceptance of the application
(Part 3, s. 21(3)(a)) or within such further time as the
claimant and respondent agree (Part 3, s. 21(3)(b)).
Any amount determined due from the respondent to
the claimant must be paid within five business days of
the adjudication determination being served upon the
respondent (Part 3, s. 23(1)(a)), or a later date if the
adjudicator so determines (Part 3, s. 23(1)(b)).

In reality the claimants are likely to act at their
earliest opportunity to maximize their possible payment
sum, whilst the respondents are likely to try and delay
the process as long as possible to give them more time
to collect and provide evidence for their response to the
application to minimize payment.

Throughout the whole of the process the respondent
has a limited period to collect and compile evidence
from their project records to produce a payment
schedule in defence of a payment claim that may have
taken the claimant up to 12 months to compile.

Valuation provisions

Part 2, s. 10 of the Act requires the construction work
and the supply of goods and services to be valued:

(1) in accordance with the terms of the contract; or
(2) if the contract makes no express provision with
respect to the matter, having regard to the

contract price, any other rates or prices set out in
the contract, any variation agreed to by the
parties to the contract by which the contract
price, or any other rate or price set out in the
contract, adjusted by a specific amount, and if
defective, the estimated cost of rectifying the
defect.

Validation of the amount to be paid will need to be by
the provision and agreement of appropriate contract
documentation, etc. Again, where the contract is silent
as to these details, and without pre-agreement as to the
type, form and regularity of updating of the informa-
tion, there exists the opportunity for both parties to
provide conflicting evidence in support of their argu-
ment. This works to the advantage of the claimant in
respect of the time provisions of the Act.

Notification provisions

Division 4, s. 31 of the Act outlines the requirements
for the serving of notices in detail, and states when the
notices are perceived to have been received.

Section 31(e) of the Act enables the parties to
contractually agree what means and form notices can
take other than those specified. Under this section of
the Act the parties can pre-agree the use of the
protocol’s model clauses outlining the type, form and
periods of updating and notification of contract
documentation to be used.

The protocol’s model clauses

In October 2002, the SOCL published a Delay and
Disruption Protocol (the protocol) (SOCL, 2002)
aimed at addressing the issues associated with delay
and disruption on construction projects in the context
of the United Kingdom’s (UK’s) legal system and
standard forms of construction contracts. The SOCL is
an organization founded in 1983 with over 1,700
members from all sectors of the construction industry
which promotes, for public benefit, the education,
study and research in the field of construction law and
related subjects in the UK and overseas. It undertook
the production of the protocol of its own accord
following three years of extensive consultation with the
UK’s construction industry, concerning the effective
means of dealing with delay and disruption disputes.

The protocol is not put forward as a benchmark
of current good practice, but as a general statement
and guide whose recommendations are to be applied
with common sense. The protocol’s objective is to
‘provide useful guidance on … the common issues that
arise in construction contracts’ (SOCL, 2002), whilst
its purpose ‘is to provide a means by which the parties can resolve these matters and avoid unnecessary disputes’ (SOCL, 2002). The protocol is not intended to be a contract document, and its contents are not meant to take precedence over the express terms of a contract, nor is it intended to be a statement of law. It is a proposed ‘scheme for dealing with delay and disruption issues’ (SOCL, 2002) in a balanced and viable way that is available for:

- adoption by the parties to a construction contract, in order to provide the means to avoid extension of time disputes;
- an aid to deciding issues that are not clearly covered by an existing contract;
- an aid to decision makers ... in dealing with delay issues (McCredie, 2002).

Implementation of the protocol is intended to be by agreement between the parties by whatever administrative procedures they consider suitable and acceptable. Where the parties have agreed to use the protocol as an aid to the management of the contract, the protocol is to prevail over any conflicting case law, but where the protocol is in conflict with any of the terms of the contract, the contractual terms are to take precedence.

Recognizing the reputation of the construction industry for poor record keeping and project progress recording, the SOCL produced model clauses contained in the protocol for inclusion in the specification section of the project documents.

The model clauses recommend the types, form, detail, methods and periods of updating of site records, to be kept and maintained during the project to ensure that adequate and suitable records exist to assist in the quantification of the consequences should a delay and disruption dispute occur. The information contained in these records would also be suitable for the preparation of, and in responding to, a payment claim in accordance with the Act.

**Model specification clause (MSC)**

The MSC included in appendix B of the protocol ‘describes the requirements for the preparation, submittal, update and revision of the contractor’s programme’, and is meant to be ‘in addition to or to expand upon the requirements of the clauses of the conditions of contract’ (SOCL, 2002). The programme is to be used by the contractor to plan and execute the works. The Contract Administrator (CA) is to use it as a means of monitoring the progress of the works, and as the basis for the assessment of any extensions of time due to the effects of any delay on the progress of the works.

The MSC recommends three programmes to be produced (as illustrated in Figure 3) and contains comprehensive requirements concerning the content, form and timing of the submissions of:

- the initial programme (IP);
- the accepted programme (AP);
- the updated programme (UP).

**The initial programme**

The MSC states that within two weeks of the award of contract (or such time as specified in the conditions of contract) the contractor must submit to the CA an IP and all accompanying schedules. The IP should outline the first three months planned construction works, and should be in sufficient detail to ensure that the adequate planning, execution and monitoring of the works can take place. The programme should be submitted as either a linked bar chart or a precedence network (produced in a format and using techniques that are acceptable to the contract administrator). The degree of detail to be included in the IP is to be comprehensive.

**The accepted programme**

The MSC states that within four weeks of the award of contract (or such time as specified in the conditions of contract) the contractor is required to submit a programme (incorporating the IP) showing the planned order and procedure with which they intend to carry out the works, to the CA, for approval and acceptance. The CA then has 10 working days to accept or reject (giving reasons for the rejection) the submitted programme. Upon rejection of the submitted programme the CA can require the contractor to revise and resubmit the programme. The programme is deemed to be accepted if the CA fails to accept or reject the programme within 15 working days of receipt of it. Upon acceptance by the CA the programme becomes the AP and is used for the monitoring of project progress.

The AP should be submitted to the CA in electronic format (prepared and submitted using a specified or agreed project planning software), together with a hard copy of a bar chart or tabular report in a pre-agreed format. The hard copy requirements can be dispensed with by agreement, but electronic copies must be kept. Upon acceptance by the CA an electronic copy is saved for record purposes. The degree of detail to be included in the submitted programme should be comprehensive.

If the contractor changes the methods or sequencing of the works, the CA grants an extension of time, or whenever circumstances arise that in the opinion of the CA will affect the progress of the works, the CA can require the contractor to update the AP and any
associated documentation for submission for approval within 10 working days of the event (or on a monthly basis if it is a regular event). Once the revised programme is accepted by the CA it replaces the previous AP.

The updated programme

The AP should be updated for actual progress on a monthly basis and the resulting UP archived as an electronic file for record purposes. Actual progress

Figure 3 Model specification clause
should be recorded by means of actual start and actual finish dates of activities, together with percentage completion and/or remaining duration of incomplete activities. Periods of suspension of activities should be noted. The UP should be submitted to the CA for acceptance as a true record. The CA is to use the UP to monitor the progress of the contractor by comparing it with the AP.

Additional documentation

The MSC recommends that the contractor submit the following additional documentation to the CA.

Method statement

At the same time as the contractor submits the programme to the CA for initial acceptance (or such other time as may be specified in the contract), the MSC requires the contractor to submit a method statement (fully cross-referenced to the programme) containing a general description of the arrangements and methods of construction and temporary works designs to the CA for acceptance.

A change to the accepted method statement (by either party) requires the revised method statement to be re-submitted to the CA for acceptance.

Acceptance of the method statement by the contract administrator does not make the method statement a contract document, nor does it mandate the works to be constructed strictly in accordance with that document, and the contractor remains responsible for the construction of the works in accordance with the contract documents.

Cash flow estimates

Within four weeks of the award of contract (or such other time as specified in the contract) the contractor submits to the CA a detailed cash flow estimate, in quarterly periods, of all payments the contractor considers they will be entitled to under the contract. Revised cash flow estimates are to be submitted at quarterly intervals based on the updated programme if required by the CA.

Model records clause (MRC)

The MRC has been drafted to be included in the specification section of a projects tender documentation (or in the contract conditions if the parties choose) and consists of two clauses.

Simple records clause

Clause one is intended to be suitable for small projects and identifies the minimum of records that should be kept by the contractor to enable the identification of activities on site, labour on site, plant on site, subcontractor work on site, materials delivery, site instructions issued, weather conditions and any delays encountered, to be submitted to the CA on a weekly or monthly basis.

Medium to high value or medium to highly complex projects

Clause two is intended for use on projects of medium to high value or medium to highly complex projects. It is also suggested that it could be used as a menu of potential documents to be submitted on smaller projects, depending on the levels of risk, administrative staff and facilities available.

The clause consists of 10 sub-clauses. The contractor is responsible for maintaining and submitting records of all activities carried out on site, in a form agreed between the parties (giving a comprehensive list of what should be recorded) and requiring the parties to agree the intervals at which these records should be delivered to the CA.

The clause also states that daily reports (numbered sequentially) should be delivered to the CA at the end of the working week to which they relate (or as otherwise agreed). These reports are to be signed and dated by the CA. Any deficiencies in the work are to be identified, and as they are corrected they are to be acknowledged on the daily report. The CA is to notify the contractor of any non-compliance with the reporting procedures.

The clause states that the contractor is to deliver a weekly report within two working days of the end of the week to which it relates (or as otherwise agreed) and a monthly report within five working days of the end of each agreed monthly period (or as otherwise agreed) to the CA, in a form agreed between the parties, that includes a summary of the work performed and referenced on the agreed programme, with a summary of a list of deficiencies and any delays encountered.

The procedures and records outlined in the model clauses are extensive. The manual application of such procedures would do little to assist the respondent in the production of a payment schedule (other than ensure the information is available for use) in response to a payment claim within the time provisions of the Act. The combined use of the information collected following the protocol’s model clauses and the application and use of web-based technology (WBT) could assist the respondent in the timely production of a payment schedule in accordance with the requirements of the Act.

Web-based technology (WBT)

Lawson et al. (2001) claim the use of information and communication technologies (ICTs) enables
organizations to improve business processes and communications within an organization, as well as with trading partners. Key themes emerging from the literature include:

- reduced administrative costs of procurement;
- access to new markets;
- improved storage and retrieval of project information;
- improved communications;
- more efficient document control;
- construction time savings;
- minimized errors;
- increased competitive advantage.

Bjork (2003) has stated that 'Electronic Document Management (EDM) has the potential to enhance the information management in construction projects considerably, without radical changes in current practice ... EDM is quickly being introduced in practice, in particular bigger projects. Often this is done in the form of third party services available over the World Wide Web (WWW).’ The use of Internet service providers (ISPs) has grown with a steadily increasing proportion of business transactions being carried out online and has become a vital means of communication and data transfer for businesses, governments and financial and academic institutions (Collins, 2003). A number of systems are currently available in Australia and are being trialled and used by some of the leading Australian construction organizations. Providers such as Aconex Australasia (www.aconex.com), inCite (www.optusincite.com), projectCentre (www.projectcentre.net) and The Network for Construction Collaboration Technology Providers (www.ncctp.net) provide systems for use in the procurement stages of projects. Each provider promotes the benefits of increased control and productivity in the processes of tender management, design document preparation and management and purchasing. The rapid development in information technology (IT) has enabled the streamlining of the construction procurement process resulting in a move away from paper-based processes (Thomson and Singh, 2001). Errors in communication using paper-based systems have the potential to cost the construction industry in the region of 1%-2% of its total expenditure (CSIRO, 1998). Whilst advancement in the acceptance of electronic procurement has increased amongst the construction industry, there is limited development and application of the technology to other areas of the construction administration processes.

WBT for use on construction projects consists of a central information repository containing the vast array of project documents, design information and correspondence (current and superseded). This ensures a smoother flow of accurate and up-to-date information, resulting in fewer errors in the documentation (CSIRO, 2000). These can be accessed instantaneously by project participants at any time, from wherever they have access to a computer and Internet facilities (Nielson and Sayar, 2001). The typical ICT infrastructure requirements are:

- a personal computer (PC);
- a connection to the Internet;
- a processor faster than 500MHz;
- an internet browser;
- basic computer skills and an understanding of the WWW and Internet access.

Participants would then have the ability to access and be able to upload and download the most current and up-to-date project documentation instantaneously to/from a centralized single repository, thereby minimizing the risk of using outdated and conflicting information, as well as having access to previously ‘filed’ documentation. Levels of security can be established to ensure that only those who are authorized have the ability to upload, download and have access to specific documentation. Project documentation can be archived (correspondence, as-built and superseded) within the repository providing records of what documents were available, to whom they were available, when they were available and by whom (and when) they had been accessed, as a means of providing evidence to limit, resolve or avoid disputes. This would enable those involved in the administration of a construction project to manage and administer the project documentation in an efficient and effective way that would assist them in complying with the requirements of the Act should they wish to issue a payment claim or compile a payment schedule in response to a payment claim.

Research aims and objectives

The aim of this research was to obtain opinions concerning the application of innovative protocols and technologies such as:

- the SOCL’s Delay and Disruption Protocol’s model clauses for the recording of project information and the monitoring of project progress; and
- the implementation of innovative WBTs as project administrative tools for the efficient and effective recording and communication of that information

as a means of administering construction project documentation, enabling the efficient and effective
compilation and extraction of data in order to equitably comply with the requirements of the Building and Construction Industry Security of Payments Act 1999 (NSW) Australia.

Methodology

The research was conducted in three stages in accordance with the Commonwealth of Australia’s National Statement on Ethical Conduct in Research Involving Humans (Commonwealth of Australia, 1999) following procedures approved by the University of Newcastle’s Research Ethics Committee.

Stage 1

A detailed review of the provisions of the Act, the protocol’s model clauses and literature on the Act, the protocol and WBT was carried out to determine the processes and procedures required to be followed, and the advantages and disadvantages of their implementation.

Stage 2

Semi-structured qualitative interviews were carried out with four of the protocol’s drafters, three Australian legal practitioners specializing in construction disputes and three Australian construction industry practitioners experienced in the administration, negotiation and resolution of construction claims, to obtain their opinions of the effectiveness and suitability of the protocol’s model clauses as a means of administrating a project’s documentation. Background details of those who were interviewed are contained in Table 1.

Stage 3

A content analysis of the interview transcriptions using Ethnograph V.5 software was conducted to determine the possible effectiveness of combining the use of the protocol with WBT for equitably complying and administering the requirements of the Act.

Interview results and discussion

The main issues associated with the inequity of the application of the Act are:

1. Time available for:
   a. the claimant to prepare a payment claim;
   b. the respondent to prepare a payment schedule in response;

2. Availability and accessibility of accurate and reliable project information and documentation to prepare the payment claim and payment schedule within the allocated time frame.

Table 1  Participants’ background

<table>
<thead>
<tr>
<th>Participant reference</th>
<th>Participants’ background</th>
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<tbody>
<tr>
<td>SOCL1</td>
<td>An independent claims consultant with over 20 years’ experience of working in the construction and civil engineering industry</td>
</tr>
<tr>
<td>SOCL2</td>
<td>A solicitor and partner with a leading UK law firm with over 20 years’ experience of resolving national and international construction and engineering disputes</td>
</tr>
<tr>
<td>SOCL3</td>
<td>Managing director of a specialist risk, programming and dispute resolution organization with over 14 years’ experience of civil engineering and building disputes</td>
</tr>
<tr>
<td>SOCL4</td>
<td>Head of a large UK organizations forensic engineering and construction disputes team with over 20 years’ experience as a chartered quantity surveyor and over 14 years’ experience as an arbitrator and adjudicator</td>
</tr>
<tr>
<td>PART1</td>
<td>A lawyer and arbitrator who is a partner in a leading Australian law firm whose areas of expertise are construction, dispute resolution and litigation</td>
</tr>
<tr>
<td>PART2</td>
<td>A lawyer and partner in a leading Australian law firm with over 17 years’ legal experience who specializes in construction law</td>
</tr>
<tr>
<td>PART3</td>
<td>A director and co-founder of a specialist Australian construction and asset cost consulting quantity surveying practice with expertise in commercial construction, procurement and dispute resolution</td>
</tr>
<tr>
<td>PART4</td>
<td>An assistant contracts manager in the legal and contractual department of one of the Australian States Department of Public Works</td>
</tr>
<tr>
<td>PART5</td>
<td>A lawyer and arbitrator who is a partner with a leading Australian law firm, a Fellow of the Institute of Arbitrators Australia and a Member of the Australian Institute of Judicial Administration, whose areas of practice include construction law and ADR</td>
</tr>
<tr>
<td>PART6</td>
<td>A director of an Australian quantity surveying practice representing clients and contractors, with over 15 years’ construction industry experience</td>
</tr>
</tbody>
</table>
Agreement as to the accuracy and content of the information contained in the documentation;

Currency/reliability of the information concerned;

Administrative costs involved in the collecting, recording and processing of the project information.

The Act contains beneficial time provisions for the preparation of a detailed and comprehensive payment claim by the claimant. The respondent has limited time under the Act in which to compile a similarly detailed response to the payment claim.

The disproportionately long period of time the claimant has to prepare a payment claim compared with the limited time the respondent has to prepare a payment schedule in response is a feature of the Act. These provisions result in a perceived inequality in favour of the claimant. One means of overcoming this would be for the Act to be amended. Although not impossible, this at present would be unlikely. An alternative would be to devise and implement an effective and efficient administrative system that would enable the collection, collation and processing of relevant project data in a format suitable for use in complying with the provisions of the Act. The extensive array of project documentation and data generated during the administration of a construction project complicates matters further. The project records are often disorganized, contain irrelevant and superfluous information and are in an inappropriate and unusable format for inclusion in a payment claim or payment schedule.

The protocol's model clauses provide a framework for agreement as to the types and format of project records and documentation that should be kept, as well as the period of updating of those records. The previously updated project records (as well as the latest updated records) can be filed (and made available for access by both parties) for future reference, as well as for use in the compilation of a payment claim and payment schedule.

Individual sets of records held by each party can also present difficulties. Apart from the duplication of administrative and storage costs by each party (ultimately passed on to the client), disorganized parties, unable to locate or identify the required project documentation, may dispute the accuracy and content of the records put forward or relied upon. Such action adds to the resulting dispute difficulties and poor project relationships.

The use of an appropriately designed WBT system as a means of administrating the model clauses would provide a single repository of project information and documentation that was accessible by all involved, eliminating the duplication of the administration and storage costs. The accessibility by all parties to a comprehensive database of project information and documentation (historic and current) would assist in the negotiation and resolution of many claims prior to them becoming fully fledged disputes. Should matters evolve into a payment claim, the availability of the database of information, readily accessed by WBT, would assist in the speedy compilation of both a payment claim and payment schedule, thereby eliminating much of the inequality currently present under the Act.

The introduction and implementation of innovative protocols (such as the SOCL’s model clauses) and innovative technologies (such as WBT) as a means of administering a construction project and for complying with the Act would have a likely impact on a construction organization’s methods of working in terms of project administration, project hardware/software requirements, personnel requirements and training requirements. With this in mind the participants were asked to state their opinions of the likely consequences for an organization of using the protocol’s model clauses and WBT in relation to:

- project administration,
- project hardware/software requirements,
- personnel; and
- training.

Project administration

The model clauses recommend detailed and extensive procedures for the submitting, approval, recording, and updating of programmes, and the keeping of appropriate project records. The participants were asked their opinions of the likely consequences the implementation of these procedures may have on project administration. Edited transcriptions of their responses are contained in Table 2.

The protocol drafters agreed that the implementation of the model clauses would result in an increase in the cost of project administration. There were comments from the Australian legal representatives and construction industry representatives concerning the likely increase in project administration costs as a result of implementing the model clauses. The size of the project was considered to be a factor in the economic implementation of the protocol’s model clauses.

There was no indication that the procedures recommended were typical of what the Australian construction industry already used. There was criticism from
participant 5 of the methods currently in use. This may be due to a lack of knowledge or appreciation of the relevance and possible use of the information to be collected on site, lack of time or opportunity to collect the information, inappropriate site recording systems, or a combination of all, by those responsible for the collecting of such information on site.

Benefits of the implementation of the model clauses requirements were acknowledged by a number of participants. Comments indicated acceptance of the philosophy of the protocol of achieving agreement as to the processes and procedures to be employed prior to the commencement of the project. There was concern raised about the likely levels of benefit returned for the amount of administrative work involved with the statement, which indicated that the model clauses were perceived to be beneficial through the minimization of disputes. The identified benefits of transparency, honesty, professionalism and clarity would not be appreciated unless a dispute situation arose. These benefits were considered to be advantageous. The recognition that the application of the model clauses was likely to be administratively onerous was considered to be a major disadvantage to the likely success of the implementation of the clauses. Many of the criticisms raised could be alleviated by the use of a well-designed WBT system that could eliminate the perceived administrative problems and assist with the adoption and application of the model clauses by providing:

<table>
<thead>
<tr>
<th>Participant reference</th>
<th>Participants’ opinions—project administration</th>
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<tbody>
<tr>
<td>SOCL1</td>
<td>‘... I would say there is a cost … I think any of these model clauses do incur a cost … the procedures outlined were … best practice and good practice.’</td>
</tr>
<tr>
<td>SOCL2</td>
<td>‘... complying with the recommendations ... was going to put some additional loading on the administration side and therefore increase costs.’</td>
</tr>
<tr>
<td>SOCL3</td>
<td>‘... where the administration has been most affected is in the paperwork recommended ... it’s going to be more expensive for some clients ... many jobs actually keep the recommended records anyhow. All that the protocol does is to set up guidelines as to how they should be related to the programme and records of claims ... transparency during the job in terms of what the critical path was, what the work flow/sequence was and what mitigation was put in place as a result of events ... it is going to make the industry more honest, professional and transparent.’</td>
</tr>
<tr>
<td>SOCL4</td>
<td>‘There is no doubt that following the protocol will increase the administration costs of the project ... having forward visibility to your project in terms of how long it’s going to take, what it’s going to cost, what resources are necessary ... can reduce the cost of doing the works.’</td>
</tr>
<tr>
<td>PART1</td>
<td>‘... there’s going to be a greater deal of clarity in their administration and their actual cost recovery and the efficiency with which they build the job ... Hopefully the benefit of that would shine through with better savings and more efficiency, both in terms of time and in terms of cost.’</td>
</tr>
<tr>
<td>PART2</td>
<td>‘... any attempt by the parties to reach agreement at the outset to the format and format of programmes and how they will be used in assessing extensions of time can only reduce disputes or disputeation.’</td>
</tr>
<tr>
<td>PART3</td>
<td>‘... if you’ve got a project that’s of substantial value, ... over $50 million and in excess of a 12-month programme ... the consequences to the organization would make little difference at all, because they are likely to have a full-time programmer on the project, or somebody at least updating the programme on a weekly or bi weekly basis, so that wouldn’t be substantial. But I think on a smaller project ... they would need to probably allow/allocate funds, probably one or two thousand dollars a week for a programmer ... so it could affect the price of the project ... If there’s no delay costs and no delay on the project then a lot of effort has been put in for obviously no gain.’</td>
</tr>
<tr>
<td>PART4</td>
<td>‘... the impact upon project administration is a big issue in that the protocol is quite administratively onerous on both parties ... I’m not sure what the benefits would be in monetary terms, but I do tend to think that, although it might not be the case on smaller projects, on bigger ones the benefits of implementation of the protocol will outweigh the cost of implementation... most of the information we use anyway ... is used by builders and subcontractors in claims.’</td>
</tr>
<tr>
<td>PART5</td>
<td>‘... my experiences ... have often found the biggest problem ... is the abysmal state of the project administration ... They don’t record them very accurately or at all ... The project administration has to improve ... if we could see adherence to a strict requirement for programmes and project administration that would be excellent and would make a lot of disputes probably disappear.’</td>
</tr>
<tr>
<td>PART6</td>
<td>‘If both the employer and the contractor, if they’re up to speed ... then it's just the usual processes, ... they’ll have a similar understanding of how they are approaching it ... If the employer’s up to speed ... but the contractor isn’t then the contractor is going to find it very difficult to get up to speed ... and making sure that all of the reporting is done when and how it’s required.’</td>
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• a standard set of forms for each activity in the facilitation process;
• prompt delivery of the documents to the addressed construction participants;
• the means to know if the other party has read the documents;
• record keeping through a centralized database, ensuring all of the participants have the same documents; and
• avoidance of the mismanagement of documents (Charoenngam et al., 2003).

Project hardware/software requirements

The model clauses require the parties to agree and use appropriate computer hardware and software for the preparation, submittal, updating and storing of the project programme and accompanying records. The participants were asked their opinions of the likely consequences that the implementation of these recommendations would have on project hardware/software requirements. Edited transcriptions of their responses are contained in Table 3.

The protocol drafters, the representatives of the Australian legal profession and the Australian construction industry indicated that the implementation of the model clauses would have minimal effect on the project hardware and software requirements. There were some concerns over the quality, availability and compatibility of suitable software and hardware.

The availability of the required hardware and software for the implementation of a WBT system was not considered to be a problem for the majority of construction projects. By using WBT, the issue of compatibility between systems would need to be addressed when the parties initially agreed to operate the system. Parties would not be allowed to tender for the contracts concerned unless they had (or were willing to acquire and implement) the specified hardware and software.

Personnel

The implementation of the recommendations of the protocol’s model clauses would need to be administered by suitably qualified and experienced personnel. The participants were asked their opinions of the likely consequences that the implementation of these procedures may have on project personnel requirements. Edited transcriptions of their responses are contained in Table 4.

The protocol drafters acknowledged that the adoption and implementation of the model clauses may have some effect on project personnel requirements. Availability of suitable personnel to carry out the recommended procedures was a concern. The representatives of the Australian legal profession and Australian construction industry agreed that there may initially be a shortage of suitably qualified and experienced personnel, and acknowledged that there would be demand for more personnel on site, but indicated that this would be resisted by the industry in an attempt to save on project costs.

The increased administrative responsibilities resulting from the implementation of the model clauses for those responsible for the administration of a construction project could be alleviated by the use of WBT without the need for an increase in project administrative personnel. A well-designed WBT system using a central repository for the storage of all of the project’s documentation would ensure that it was instantaneously available to those who needed it, in a format

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<tr>
<th>Participant reference</th>
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<tbody>
<tr>
<td>SOCL3</td>
<td>‘In terms of hardware and software requirements it shouldn’t be any different again to what is going on in this day and age, when on most jobs there is software that is so easily used on projects.’</td>
</tr>
<tr>
<td>SOCL4</td>
<td>‘All but the smallest jobs have site computers … that’s adequate to deal with most projects … so there is no excuse for saying that the cost of the software or the hardware is any impediment.’</td>
</tr>
<tr>
<td>PART2</td>
<td>‘Most contractors have the relevant hardware and software … Most serial principals … will have it, most one-off principals won’t. But their consultants … will.’</td>
</tr>
<tr>
<td>PART3</td>
<td>‘If the protocol is taken on by most firms then the hardware suppliers and software suppliers would integrate it. I can’t see that being a great problem.’</td>
</tr>
<tr>
<td>PART4</td>
<td>‘I think that the hardware/software requirements are probably less of an issue for organizations … It would really be a matter of ensuring that they have the necessary tools available to enable them to effectively administer contracts.’</td>
</tr>
<tr>
<td>PART5</td>
<td>‘… it would be desirable for contractors to have better project software and hardware to cope with the requirements of providing a programme and notification.’</td>
</tr>
<tr>
<td>PART6</td>
<td>‘Hardware, I don’t think that’s necessarily going to be too much of a problem, it’s more the software and the compatibility between systems.’</td>
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most appropriate for that use, minimizing the demands on administrative personnel.

Training

The implementation of the recommendations of the protocol’s model clauses could have an effect on an organization’s training requirements. The participants were asked their opinions of the likely consequences of implementation of these procedures on training requirements. Edited transcriptions of their responses are contained in Table 5.

There was a difference of opinion amongst those interviewed concerning the likely training requirements resulting from the implementation of the model clauses. On the job training and project experience was considered more relevant, whilst targeted training was considered more beneficial.

Representatives of the Australian legal profession and Australian construction industry had differences of opinion concerning the need for training as a result of the adoption and implementation of the protocol’s model clauses.

Although those interviewed considered the need for training would be a necessity, it was suggested by participant 6 that the requirements would not be an issue provided the model clauses were adopted and implemented industry-wide, especially on larger projects.

The comments of those interviewed acknowledging the need for training identify an apparent divide in knowledge, understanding and appreciation of the purpose and possible use of the records and documents, between those who collect and compile the data and site records, and those who may eventually use that information in a possible dispute situation. This could be a reflection of the lack of investment in training by the industry in the past. Participants have acknowledged that the adoption and implementation of the protocol’s model clauses is likely to result in a demand for additional administrative staff on projects, which will be resisted by the industry as a cost reduction exercise, resulting in more responsibility and administrative duties for existing staff. This, together with a lack of knowledge and understanding of the use and importance of the site records they compile and collect may exacerbate the problem further. Investment will be needed in the training and education of suitably qualified and competent staff, in the purpose, methods, techniques, systems and computer hardware and software, to ensure the potential recognized benefits of the adoption and implementation of the protocol’s model clauses are achievable.

The introduction of a WBT system to any project would require extensive training during the initial introduction period, together with continued support during the life of the project. Once the system was fully developed and operating, those involved in its use on a continued basis would become familiar with the processes and procedures involved, thereby requiring a reduction in training and levels of support. Once fully implemented within a major contractor/client, the insistence on its use on all projects would eventually lead to a situation whereby regular subcontractor personnel would become fully conversant with the system, and eventually result in limited training
requirements (except for updates and modifications to the system and the introduction of new staff).

**Conclusions**

The claimant has the advantage of the generous time provisions contained in the Act in which to review, collect, analyse and compose the data from the project records for inclusion in their payment claim. The respondent is disadvantaged by the limited time available to them under the Act in which to investigate, review, process and compile data from their project records during the production of a payment schedule in response.

The adoption and implementation of the protocol’s model clauses provide an effective means of collecting, recording, updating and filing project data for use in the preparation of payment claims and payment schedules in compliance with the Act and the administration of a construction project.

The adoption and manual implementation of the model clauses would likely result in an increase in project administration duties and project administration costs. The degree of impact of this will be

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**Table 5  Participants’ opinions—training**

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<tr>
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<tr>
<td>SOCL2</td>
<td>‘We would need a very considerable amount of training of appropriately qualified personnel, so that would be a cost increase … we suspect that this might be a relatively small investment for a potentially very significant cost saving because all of this work on the programme is not designed specifically with disputes in mind, it is designed with basic project management in mind, mainly getting the project delivered on time and on budget.’</td>
</tr>
<tr>
<td>SOCL3</td>
<td>‘… in terms of the skills required to do this are no different to what happens on a typical job … The programming, in terms of preparing the base line, updating it monthly and identifying changes that are made rely on the people in the industry anyhow … They are already on every job site, so you do not need to send someone to school to be a programmer, they need to basically have hands on training. I think that training for application of the protocol … are hands on skills so you shouldn’t require any additional training, unless it is someone who has never used computers or who is not familiar with programming.’</td>
</tr>
<tr>
<td>SOCL4</td>
<td>‘… I think there is training required on the employers’ side of the fence. I think most contractors have some understanding of critical path and computer software. It’s when you get the architects, who have been doing this for the last 30 years. They think they can give an extension of time without reference to critical path programmes. They are the people with the largest amount of learning to do and in the short term that is a limitation in that those people are not sufficiently available and it will take some time before the industry catches up with the requirement.’</td>
</tr>
<tr>
<td>PART1</td>
<td>‘I think you would have to have an increase in training on all of those [project administration, project hardware/software requirements and personnel].’</td>
</tr>
<tr>
<td>PART2</td>
<td>‘There will be a need for training, no doubt about it. My experience tells me that on most projects, at least a lot of projects, the programming, the record collection and the analysis of the programme and the record collection by site staff and even some head office staff is fairly basic and there’s a big gap between their data collection and analysis and that of experts who are then brought in to assist. I think the consequence of implementing or seeking to include in contracts very detailed clauses on programming, record collection and analysis of the programme and data, is that you will need contractors and others who will need to spend time and train their staff considerably in those procedures.’</td>
</tr>
<tr>
<td>PART3</td>
<td>‘I think training would not be that difficult, as long as you can extend it on to the existing staff members … I don’t think that would be a concern on a larger project.’</td>
</tr>
<tr>
<td>PART4</td>
<td>‘I think training is quite important because many of the project administrators are people who came up from being foremen or who don’t have any real training … So yes I think there is definitely a need for the training to provide the people who operate the systems and who comply with the requirements.’</td>
</tr>
<tr>
<td>PART5</td>
<td>‘I think you would have to have a very considerable amount of training of appropriately qualified personnel, so that would be a cost increase … we suspect that this might be a relatively small investment for a potentially very significant cost saving because all of this work on the programme is not designed specifically with disputes in mind, it is designed with basic project management in mind, mainly getting the project delivered on time and on budget.’</td>
</tr>
<tr>
<td>PART6</td>
<td>‘If you’ve got contractors trying to compete, having to train if they’re not using these processes and they want to keep their existing guys, and they don’t necessarily want to have to get somebody in for a particular project that uses these model clauses or uses the protocol then they’ll have a bit of a learning curve to go through in training people up to handle it. If it becomes widespread and they’re up to speed then there’s no real issue with training. But if it’s a one-off project and the contractor’s using different contractual arrangements on other projects then they might have a lot of training to do and you’ll be getting people up to speed for a single project.’</td>
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dependent upon the size and/or complexity of the project. Smaller, less complex projects were felt to be the least likely to benefit from the implementation of the model clauses due to the perceived increase in administrative duties and administrative costs. Larger and more complex projects were perceived to be the most likely to provide a return on investment.

Should the model clause recommendations be implemented there would be a perceived improvement in the honesty and professionalism of the industry due to increased transparency and clarity in the administrative processes carried out.

The manual application of the model clauses was thought to be administratively onerous. This was considered to be a disadvantage and hindrance to the likely adoption and application of the model clauses. The implementation of WBT as a means of administering the application of the model clauses for use in the preparation of payment claims and payment schedules in accordance with the Act could overcome this.

The pre-agreed use of innovative protocols and technologies such as the SOCL’s model clauses and WBT could assist with the efficient and effective administration of the relevant project documentation. The availability of the same comprehensive project documentation to both parties, in the appropriate format, that is readily accessible for inclusion in a payment claim and payment schedule via WBT would enable an efficient, effective and equitable means of administrating and complying with the Act.

The use of WBT and the availability of pre-agreed comprehensive project information and documentation to all parties can potentially eliminate many payment claims and other forms of claim, resulting in fewer disputes and potential savings due to the improved efficiencies and improved cost recovery opportunities.

Implementation of the model clauses and WBT would have minimal effect on the project hardware/software requirements. Most construction projects have the appropriate hardware and software facilities available to implement WBT.

The implementation of the model clauses would increase the demand for appropriately qualified and experienced project personnel to carry out the recommended administrative procedures effectively.

Organizations adopting and applying the model clauses are unlikely to increase the number of administrative personnel employed on a construction project. A well-designed WBT system could be a means of assisting the existing levels of administrative personnel employed on a construction project in the preparation of payment claims and payment schedules efficiently and effectively.

Overall there would be an increased need for investment in training and education by the construction industry in all areas of programming, contract administration procedures and computer software usage, to ensure that the recognized potential benefits of the adoption and implementation of the protocol’s model clauses and WBT could be achieved. This would be a natural progression/requirement with the introduction and implementation of the model clauses and WBT that would eventually permeate down the chain of regular subcontractors and suppliers.

References


Security of payments


