Fire Engineers, Models and Hired Guns

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18th of November 2011

In Australia engineers can be found accountable in common law, under statute in certain contexts and in some jurisdictions they can be found liable for professional misconduct. This paper will focus upon the emerging liability trends and the increased risk paradigm that has emerged in discretion based building control system.

Common Law Liability

Law suits are not necessarily about rights and wrongs, they are everything about the seeking of recompense from whoever is in the litigation feeding chain for moneys lost on projects or injuries sustained. Australia is a proportionate liability environment. This doctrine provides that any defendant who potentially has accountability or a responsibility for a loss will, if found liable have to account in financial terms for that adjudicated level of responsibility.

Because a number of actors in the construction and engineering dynamic are uninsured, plaintiffs are very vigilant in ensuring that they "rope in" any party that is potentially liable. Insured professionals are very attractive because of the "deep pocket" of the insurer standing behind the engineer. Some jurisdictions like Victoria and the NT make it compulsory as a prerequisite to registration to be insured. Most other Australian jurisdictions do not require building practitioners to be insured regardless of whether they are engineers, commercial builders, draftsmen of quantity surveyors. Building surveyors and residential builders are nevertheless required to be insured in the majority of jurisdictions. Majority is the opposite term because in Tasmania and the ACT, residential builders do not have to carry insurance cover.

A fire engineer needs to be aware of which construction actors are required by law to be insured visa vie those that are not because it impacts upon the risk matrix. Uninsured actors harbor less appeal than insured actors for plaintiffs as litigants are always intent on seeking out the deep pockets.

"Claims against an engineer may occur even if he did nothing wrong. This is because if there are large losses, all potentially responsible parties may be sued with a goal of letting the courts determine who is at fault. Design professionals get named because they were at the scene of the crime…… the legal obligation of any engineer is to perform in accordance with the generally accepted professional standard of care. And in cases that allow the economic loss rule, the only party that can sue an engineer is the engineer`s client. (Fire Protection Engineering – Potential Pitfalls with Professional Liability Insurance by Mark Blankenship, magazine published by the Society of Fire Protection Engineers USA).

Note that Blankenship states correctly that an engineer may be sued even if s/he or it did nothing wrong. This is correct, a lot of litigations are speculative and sometimes defendants are joined and sued as part of a fishing exercise, to see what emerges. There is also a view held by some that where there is an insured defendant, if the insurer considers that there is any risk, albeit remote, then it is "worth a crack" to get what is called a nuisance value pay out. Litigation is very much a game, a nasty game that is, and it is not for the light of heart. We had one geotechnical engineering company that was on the receiving end of 3 separate claims, for three separate apartments in a block of town houses. They had in our view no case to answer, but being a small company; they could not afford to fund the defense of three different claims for 2 years or thereabouts, even though at the "end of the day" we were very confident of their total exoneration. They thus made a decision to wind the company up, such was their fear that the sheer cost of defending the matter would inevitably lead to the insolvency of the company. You see engineers and contractors are not in the business or industry of litigation. Insurers are professional litigators; litigation is part of their raison d'être.

"The standard of care owed by professionals is determined by what can reasonably be expected by professionals professing the professional skill, taking into account all the relevant circumstances of the time - that is appropriate professional performance in that particular situation……if a particular profession does not have a generally applicable and widely shared view of professional practice, the professionals duty and standard of care is defined by default by the view of performance formed by the court in retrospect, in the course of the particular litigation proceeding……..So there remains a very significant "missing link" for the engineering profession and industry : there is no standard of

professional performance in engineering that is 'widely accepted in Australia by professional peer opinion".[1]

Tests in this arena are fluid, imprecise and in the area of fire engineering particularly so. This is because there is so much fire engineering modeling. This type of modeling particularly in the fire dynamic requires calculated hypothesis, intelligent and informed speculation and the ability to "have a go" at predicting fire behavior. One thing that the Victorian bushfire experience taught us all was that one can so easily underestimate the brutality and awesomely destructive forces of what can be at times a malevolent force of nature. Some would say that the previous "rule book" on fire controls and the understanding of the fire dynamic had to be thrown out. A prominent fire engineer once told me that he considered fire engineering to be a "dark art", a relatively new and evolving discipline in its own right. If his observations "hold water" then it would be considered to be an evolving science and accompanying that will be the metamorphosis of legal liability in so far as it relates to fire engineering.

I have quoted a very insightful and poignant extract published by The Warren Centre titled "Professional Performance Innovation and Risk in Australian Engineering Practice". Although it does not appear to have been written by lawyers it nevertheless captures the disquiet, disillusionment and nervousness of members of the engineering profession with respect to the modern day litigation malaise that if anything is gaining momentum.

"It seems not uncommon for engineering professionals to view with skepticism – if not disdain - what takes place when engineering liability issues are the subject of litigation, and the excessive time and costs involved for all parties……..[there has been] an intensified role of adversarial advocacy frequently leading to drawn out overcomplicated proceedings ; and the increase of "entrepreneurial 'expert witnesses who bring to legal proceedings limited experience , or exposure at, the rock face of contemporary professional engineering practice. The result over recent years has been a significant increase in the duration and cost of engineering litigation, significant increase in the concerns expressed in the engineering industry and profession about varying standards of expert testimony on engineering issues, and most importantly, when these issue are the subject of deal debate, the outcomes much more unpredictable". The unpredictability is the difference between the 'prospective' view that the engineer must take of any new task and its outcomes and inherent risks, and the 'retrospective' view that can be taken in expert testimony of exactly the same task and outcomes and risks after the event – with the advantage of knowing what actually happened……It may not be a perfect view, but the view formed in prospect – before the actual task gets under way – is nonetheless that of the responsible and competent professional engineer making effective use of the contemporary bank of engineering knowledge and experience…….there is a 'missing link'.[2]

The above passage raises a great many poignant points. Adversarialism is indeed on the "up and up". It is not likely to abate because we have an adversarial heritage; the only glimmer of hope on the horizon is that mediation is becoming far more popular once legal proceedings have been issued. Mediation however will not arrest the initiation of legal proceedings; rather it may serve to conclude proceedings at an earlier juncture than would otherwise be the case. Reason being when a letter of demand is issued, in the case of insured defendants it has to be dispatched to the insurer. Insurers do not often negotiate prior to the initiation of legal proceedings. Some may consider this to be disingenuous. Not really, as insures know that some letters of demand may only be speculative and unlikely to culminate in legal proceedings.

The comments about "prospective views" rather than "retrospective views" are insightfully correct. The judgment calls that are made at the time a decision is made with respect to a particular fire engineering scenario will be based upon prudent thought, the application of current if not best practice fire engineering intelligence, consideration of the relevant facts at hand along with the factoring in of certain calculated assumptions. In due course if there is a calamity and it is analyzed and judged in retrospect there is every chance that different expert evaluators will have a "different take" on matters. Ironically the retrospective analyses of the expert in a post calamity scenario are artificial and to some extent contrived. This is because "after the event" reconstruction modeling can never be totally accurate or diagnostically conclusive, because it involves a reconstruction of the events, the facts and certain scenarios in circumstances where relevant evidence may have literally vaporized. Much reliance will then be afforded to recollection, to finding out under cross examination why a person approached an engineering solution the way he or she did, what calculations were factored into the fire modeling, what were the fire scenarios that were contemplated and so forth. If per chance the fire occurred, say seven years previously, then it is not inconceivable that important evidentiary documentation that formed the basis of judgment had disappeared.

As stated in the above quoted material there is indeed "varying standards of expert testimony". The variance can be due to respective sizes of the hip pockets. A large hip pocket can afford a top expert and a more limited budget will compel one to engage a lesser light. Just like the legal profession has a

graduated scale of legal experts ranging from junior barrister, to senior junior to Queens' Counsel there are technical experts that enjoy a preeminent reputation and there are "Jonny Come Latelys" who have a tendency to underwhelm.

But it is not the variance in seniority and juniority that is the greatest cause for variance; rather it is the fact that the experts have a remarkable propensity in litigation matters to not agree. In 25 years of practice, having had conduct or involvement with thousands of cases, I cannot recall one case where the experts have agreed on the diagnosis and the costs. Sometimes the variance in term of opinion simply beggars belief. I recall one matter recently where one side stated that the cost of rectification would be $30,000.00 and the other side said $1,200,000.00. The lower sum I might add was closer to the mark. There is a culture where experts are loathing arriving at a diagnosis that is objectively "un tainted" by the intrusive shadow of the fee paying client. One side will be trying to make a "silk purse out of a sows ear" and the other side will say that it's simply a "sows ear", when in fact the truth may be somewhere in the middle and the much vaunted ear may simply be a "polyester, wool combination ear".

At the time of finishing this paper I had a meeting with a new client and had the good fortune of reading an expert's diagnosis on a waterproofing issue. The most common word that the expert used was "may"; it "may" be because, yet it "may" also be because of such and such". At the end of the report the expert concluded that it would be a good idea to get some additional expertise because his particular area of expertise was not really commensurate with the intricacies of matters at hand. Where the expert did show unequivocal enthusiasm and a very robust disposition was the size of the bill and the bill did not use the word may when it talked about payment terms. So when the Warren Centre is ruing the varying standard of expert witness competence they are sadly not exaggerating.

Performance Regulation and Fire Engineering

With the advent of the performance based building code in Australia in the mid ninety's the country moved away from predominantly prescriptive regulation to performance based building control. Performance regulation troubled a great many prominent fire engineers and I recall addressing a conference with the well-known fire engineer Dr John Hall from the USA. Dr Hall made somewhat of an ominous yet accurate prognosis and observation when he stated that property developers when they look for a performance solution are rarely ever motivated by increasing the benchmarks of public safety. Rather they are more motivated by determining the cheapest way to build. With the coupling of private certification in Australia in the early nineties and the convergence of a more flexible building code there occurred a paradigm shift in building control. There was a rapid metamorphosis from a prescriptive building control dynamic to a more discretion based building control regime courtesy of the discretion that was afforded to building surveyors to sanction alternative solutions. This did not appear to bode well for regulatory control.

Much to the surprise of many of the critics of both the performance based BCA and the coupling up of the private certification system there has been no notable calamity that has been caused by said juxtaposition. This is indeed fortunate and maybe more as a result of good luck than design; although there are some that say the jury is still out. As to whether the "purple patch" will continue, only time will tell.

Certainly the case in NZ has been far more miserable, the flexibility that was afforded by the NZ Building Code, a code that was heralded in the mid-nineties as being world's best practise, proved in the fullness of time to very problematic. The flexibilities within the code were such that a very liberal approach was taken to installation of fabric and material. The culmination was the leaky building debacle, which resulted in the establishment of an Act of Parliament and a tribunal dedicated to dealing with the leaky building maelstrom. At last count it is predicted that by the time all claims are resolved there may be as much as 25 billion dollars' worth of economic downside associated with the reconstruction of woefully compromised buildings. For NZ that is a calamity as the economy does not have the capacity to easily digest that sort of impact.

Back onto home shores, the author of this paper nevertheless has always been nervous about a highly flexible performance based building code that is applied in a discretion based/subjective building control decision making environment when there is a particular application to fire engineering. The concern is heightened when active, rather than passive fire resistant proposals are sanctioned. The later approach tends to rely more upon alternative solutions and there is a contemplation that is implicit in the assumptions that human beings will be relied upon to have an active input into the maintenance of the fire mitigation regime. If the person responsible for maintaining an aspect of a fire retardant system goes "MIA" (missing in action) then unintended consequences may emerge.

The flexibilities that have emanated from the performance system seem to resonate with the negative inklings of Dr Hall, where he states that alternative solutions are rarely used to increase the benchmarks of public safety. The author has had firsthand experience in cases where alternatives to fire sprinkler systems have invariably been cheaper than sprinkler systems and those systems have been found wanting. Alternative solutions lend themselves to a more imaginative or creative approach to fire

engineering. It follows that there will be greater regard to fire engineering modeling and less reliance upon prescriptive measures and well established verification methods. Expert appraisal and expert thinking thus becomes paramount. So the appraisal better be “damn good”.

As sure as day follows night when there is retrospective analysis of fire modeling that is applied to a scenario where the modeling is brought into question, it will be very easy to find a chorus of experts, some of whom may be hired guns, who will be able to stridently criticize and attack the fire modeling assumptions that underpinned the alternative solution. And here belies the problem and the higher than normal risk profile for the fire engineering profession. If a defendant cannot fall back upon a prescriptive deemed to satisfy provision but is reliant upon fire modeling and associated assumptions, and I emphasize assumptions, that formed the basis of that which is sanctioned by fire engineering experts, then the rationale for the decision will be susceptible to conflicting opinion and expert attack. The experts briefed to dissect all of the ingredients that characterize the assumptions underpinning the modeling will be able to indulge themselves knowing that they are paid handsomely by the hour and are afforded a fair bit of time to form a view. On balance the blending of a plaintiff who has been the victim of a fire engineering failure complemented with the ingredients of hired gun intent on professionally shaming the hapless engineer will, from the defendant’s point of view, generate a toxic cocktail.

Compare this with a defendant being able to say that the fire engineering solutions were based upon recognized deemed to satisfy provisions or very well recognized verification methods in circumstances where a reputable expert can confirm that such compliance did occur and one has a very robust and confident defense. Alternative solutions require discretion and a high level of subjectivity; they are thus pretty easy to attack whereas DTS compliance is not.

Risk management

Where performance standards are applied and there is an election to resort to alternative solutions, there need to be some belts and braces. The fire engineering concern needs to have either internal or expert peer review so that some of the fire modeling assumptions is tested. Fire engineering is not really a discipline that lends itself to the sole practitioner paradigm as internal peer review seems to be a critical part of enlightened fire modeling.

Ensure that a fire engineered alternative solution is not driven by cost cutting as the paramount maxim. Fire causes the greatest potential for menace it is not an area that lends itself to cheapskates. Don’t accept briefs where the remuneration does not provide a sufficient level of remuneration to get the job done properly.

Choose one`s clients carefully, the combination of a client who displays a parsimonious approach to payment but equally an enthusiasm for imaginative alternative solutions is a fraught with risk.

In economic times if work is harder to find, don't compromise by engaging in fee cannibalization. The building surveying profession does too much of this and in doing so lower the charge out rate floor. As an aside 10 years ago I used to do a lot of prosecution work for councils, other law firms began to cannibalize rates and it got to the point where I refused to drop my rates so I changed direction and largely vacated the prosecution arena. The market dictated that too little was being charged for too much risk. Conveyance likewise 20 years ago was a lucrative area of practice for lawyers, until fee cannibalization began. It would now cost less to do a conveyance than it did 10 years ago. Little wonder that conveyances are regularly on the receiving end of law suits. The price they charge is not remotely commensurate with the time and precision that is required for the task. Price has to marry up with risk, if it does not it will not bode well.

Use well known fire engineering verification methods when it comes round to fire modeling. Fire engineering is the last place to "push the envelope", the last place to try something novel and new. Even in the alternative solution paradigm apply conservatism.

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[1] The Warren Centre for Advanced Engineering Limited, "Professional Performance, Innovation and Risk in Australian Engineering Practice" The Warren Centre for Advanced Engineering Limited, Sydney University NSW 2006 Australia.

[2] The Warren Centre for Advanced Engineering Limited, "Professional Performance, Innovation and Risk in Australian Engineering Practice" The Warren Centre for Advanced Engineering Limited, Sydney University NSW 2006 Australia.