

Submission 85 - Mr David Chandler & Dr Mary Hardie

Mr David Chandler made submission 48 to the inquiry into non-conforming building products in the 44th Parliament.

This document is intended as a supplementary submission to the original submission 48.

All submissions received in the 44th Parliament can be accessed via the following link:

http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Economics/Non-conforming_products/Submissions

Senate Economics Committee

Enquiry into Non-Compliant Building Materials and Products
Containing Asbestos¹

Re-positioning Non-Compliant Building Materials and Work in a transforming global and domestic construction industry.

‘The new realities of managing design, procurement, installation, compliance assurance and risk management to mitigate unchecked construction impairments in delivering tomorrow’s built world must be embraced.’

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¹ Terms of reference: http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Economics/Non-conforming45th/Terms_of_Reference

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

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Enquiry into Non-Compliant Building Materials and Products Containing Asbestos – mitigating construction impairments.

Dear Senators,

This submission will present a wider variety of perspectives and opportunities facing the construction industry than may otherwise be brought to the Committee's attention. We respectfully suggest that the Committee consider extending its Terms of Reference to include 'Non-Compliant Building Materials and **Work**, and Products Containing Asbestos'.

1. The background and interests of the persons invited to make this submission

David Chandler OAM, is a Fellow of the Australian Institute of Building and has over 40 years' construction industry experience gained on major projects and through managing large construction organizations in Australia and internationally. He is an Adjunct Fellow, in Construction at Western Sydney University. Dr. Mary Hardie is the Director of Academic Programs, Construction Management and Building Design at Western Sydney University and has a distinguished career in academia and construction related research. This submission is made in our individual capacities and does not speak on behalf of Western Sydney University (WSU). This introductory information is for context only, in making our submission.

The WSU Construction Management and Building Design program provides undergraduate and post graduate studies in Construction, Project Management, Building Surveying, Fire Safety Engineering and Bushfire Protection and offers PhD candidates research opportunities in areas covering Built Environment Sustainability, Workplace Health and Safety, Bushfire and Forest Management. Over 1200 undergraduates and post graduates are enrolled in the program. Related studies are offered at the University in Urban Planning, Industrial Design, Business, Law, Social Sciences, Computing, Mathematics, Engineering and Infrastructure.

The Western Sydney economy is set for major expansion, which will in part be driven by the commencement of the Badgerys Creek airport and associated development. The construction and engineering sector will play the central role in delivering this project and the related infrastructure. The construction, transport, real estate and manufacturing industries account for almost 50 percent of the businesses in the greater Western Sydney Economy (GWS). Small and medium sized enterprises make up 90 percent of the GWS business community. Western Sydney University has recently completed a GWS Business Innovation Mapping Study (Fallon, Sloane and Munro 2016). In 2012 there were 133,783 businesses in GWS. This mix may be typical of the outer rings of other major city capitals and regional centers.

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

Construction enterprises made up 21 percent of GWS businesses, while manufacturing only made up 5.7 percent. There is considerable potential for the construction transformations discussed in this submission to contribute to expanding the number of domestic construction related manufacturing businesses and jobs. The industrialization of construction processes we envisage will involve more value-added construction components being manufactured off-site. This will progressively lower the industry's traditional dependence in on-site fabrication. This shift will increase opportunities for a wide variety of pre-build services and products. These trends will have a major influence on aspects of the Committee's Enquiry. In this context, both **the materials** of construction and **the work** of construction **are interlinked**.

We describe the transformation period now facing the construction industry as the Modern Construction (MC) era. This era opens massive opportunity for NSW and the Australian construction economy to embrace new manufactures and innovations. The Modern Construction era has the potential to play a vital and measurable role in helping to lift the construction industry's poor productivity and performance accountability track record. This era should lead to lifting the industry's competitiveness, reducing its costs by at least 20 percent, and helping to create many new enterprises and construction jobs.

We believe that the construction industry is under measured in the national accounts. [De Valence (2010), on satellite accounts for the built environment sector, Ashworth and Perera (2015), on the economic significance of construction, and Foulkes and Ruddock (2007) on defining the scope of the construction sector, all point to under measurement.] Measuring the future impact of construction in the economy may become increasingly difficult as more construction fabrication is moved off-site into a manufacturing setting. Tracking future construction employment and the off-site construction related enterprises who service this sector will require further consideration in national accounting and by the Committee.

A recent study of technical innovation by construction related SME's, Hardie (2016) found a large discrepancy in the number of businesses listed as operating in the industry. In its counts of Australian Businesses (2016), the ABS found 339,367 construction related businesses. And, in the Innovation in Business Survey, only 128,000 active construction firms were identified. On the positive side the study found that SME's are headed by very able individuals who have chosen not to work in large businesses because of the brake that large bureaucratic organizations can put on individual creativity. Such individuals have the potential to be leaders of enterprise growth and industry change, as well as being the generators of new systems and products. The fact that the construction industry is characterized by many small businesses is both its strength and weakness.

WSU's School of Business recently completed a collaborative study with Blacktown City Council (Fallon 2016) which examined opportunities to enable more advanced manufacturing in GWS. The study examined factors including the level of international business activity present in the local economy. It found that 46 percent of businesses were engaged in exporting products, and that 75 percent of Blacktown manufacturers were engaged in global supply chains in some way by importing, exporting or both. The study examined the potential to lift the reach of those manufacturers using digital technologies. The study identified real and practical scope for growing manufacturing in GWS not only nationally but across the globe. The Committee should consider the implications of these two-way dealing flows.

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

During 2017, the WSU Construction Management undergraduate program will introduce two new learning units in modern construction. We believe they will amongst the lead programs in new academic responses to the massive transformative changes now occurring across the Construction Industry in Australia and internationally. These changes will have a profound effect on our domestic construction industry as it embraces and adapts to the three forces that we have identified as being at the heart of this transformation. The forces include;

- The construction industry finally becoming a full participant in the digital economy,
- The progressive industrialization of the industry's fabrication and assembly processes,
- The globalization of the construction market. This will involve new compliance and regulatory processes that the local industry has not been previously exposed to.

These developments will require a re-calibration of the way construction has been previously scoped, procured, assembled, accepted and used. As part of the Western Sydney University team working in this area, our submission presents some insights about how the question of '*non-compliant building materials and work*' may be addressed in a changing industry. We would value an opportunity to discuss this submission with the Committee to assist its work.

2. Summary of a confidential attachment to this submission

Chandler, Hardie and others have recently co-authored a publication that deals with *Measuring Construction Transformation and Improvement*. The main thrust of this work is to propose a new approach to measuring the effectiveness of new technologies and construction practices as they may contribute to improving construction performance and productivity. This publication is currently in draft form awaiting final editorial review and acceptance. We believe that the information included in this draft publication is of interest to the Committee.

We have provided a confidential copy of this document to the Secretariat for reference by Committee Members. The following edited extracts are included as part of this submission;

'The World Economic Forum's 2016 Report forecasts that world-wide construction turnover is expected to exceed US\$15 trillion by 2025. 60 percent of construction's turnover may occur in the Indo-Pacific economies. Australia's forecast construction turnover of around AUD\$350 million may represent less than 2 percent of global construction activity. WEF estimates that more than 100 million people are already employed today in construction worldwide. Australian construction needs to look towards, and be part of the bigger picture.'

'Construction is now a multi-jurisdictional business where its businesses form part of international value chains, where success will turn on best practice. Recent trends which reflect minimum standards and shaky compliance regimes propelling community disquiet with construction performance and costs will soon be challenged?.'

'Other industries, like retailing, telecommunication and electronics have worked around these perceived impediments to take on single point accountability for 'in-full and on-time' product or service delivery. They have done this because they recognise the growing dissatisfaction amongst their customers with the status quo and where, in a global, industrialised and digitised marketplace the cost and resources required to deal with system failures across distance, differing jurisdictions and consumer legislation has made best practice a more viable option than the minimal alternative. Construction is now at that crossroad.'

'In a globalizing industry, construction businesses will need to be more agile as they face competition from client-focused and information technology-savvy entrepreneurs who are changing the way projects are organised and delivered. New managerial, contractual and compliance initiatives will be needed to respond to the impact of technological change and lift industry effectiveness.'

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

‘A recent a study of disruption in construction by New Zealand’s BRANZ organisation found seven types of construction change drivers. These included mass customisation, products becoming services, services becoming products, separation of ownership and use, the sharing economy, and agile design, construction and planning. The study identified the constraints holding the transformation of construction back as uninformed clients, traditional industry, regulation, information/API’s, contractual constraints and banking.’

‘Despite the predicted widespread nature of disruptive innovation in the Twenty-first Century, the construction industry has mostly avoided large-scale disruption because, despite the globalisation in mega-projects, most construction until now, has remained locally based and delivered within a specific national context and regulatory system.’

‘The construction industry deals with its habitual defenses in the case of accountability by placing strict caveats on the extent of liability and the effects of acts or omissions by others may have. Another defence is tendering late stage alternates that are to be assumed by the client as suitable. These acts combine to affect work flow effectiveness, falling productivity, variable quality and the industry’s rising costs.’

‘Vereen et al. found that the quality of work over time was difficult to capture, as consistent and repeatable metrics are generally not kept or collected by the construction industry. Vogl and Abdel-Wahab advocated for the establishment of an ‘international benchmarking club’ to inform policy on productivity improvement.’

‘New on-site assembly biased construction methods will call for a rethink of construction workforce capability building. This will respond to multi-skilled sequential, advanced work packaging to be performed along with development in digital communications skills that enable self-directed workforces to directly access real time project information, to self-manage compliance and control quality, safety, problem solving and reporting. The industrialization of construction’s pieces and parts will enable real time tracking, component verification, in-service performance and energy analysis, project after-care, easier later adaptation and eventually recycling.’

‘As construction transaction flows are modernised in an industry that draws its pieces and parts from a global market place, new mechanisms will be required to attest to compliance and enable payments across widely distributed value chains. The pieces and parts of construction will soon have digital identifications that enable a chain of custody and accountability to trace from source, through manufacture, assembly and in-service. The modern construction era will for the first time force its inputs to become the sum of its parts, not just parts.’

‘The measurement framework outlined in this chapter, takes no position in advocating for one construction delivery methodology over another. It will be for the more forward thinking clients and constructors to determine how they will deploy their enterprise technologies, procurement, delivery, chain of custody and performance underwriting initiatives. These in short time will start to set the leaders apart from their slower moving counterparts. Continuing to promote one size fits all construction practices is impractical.’

‘A simple source of productivity directed data will point to opportunities for new construction components, assembly methods and services to be developed that target specific performance improvements and potentially lead to new enterprise opportunities. These should help in identifying new local pre-build and on-site innovations that feed into their local economies, while contributing to domestic employment and investment.’

‘Contestable local industry performance and capability data would enable providers of construction services to develop and offer useful project capabilities across global markets. Not knowing the likely benefit of a more productive innovation in one place verses another closes out value-adding propositions that could make their case otherwise. Their absence leaves domestic economies exposed to unknown or unsighted productivity and innovation disruptions that will eventually bear down on them. And, they enshrine unproductive practices.’

‘In the early stages of technological breakthroughs (disruptive technologies), new entrant enterprises nearly always win. This is because the functionality of the current offerings is not good enough to meet their customers’ needs. However, incumbent or established enterprises nearly always win when the technology reaches the point of being a sustaining innovation or one that meets or surpasses their customers’ requirements.’

‘Despite all these seemingly efficiency-based developments, the costs of construction rise and all published data points to the industry’s productivity flat-lining While the measurable advantages of a modern construction industry should be showing up, there are not. The traditional construction industry has remained steadfastly measurement resistant and so have its practices.’

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

‘The chapter proposes a framework to measurably lift construction productivity and effectiveness; by reducing construction durations by 50 percent and on-site construction waste by 80 percent, to lower traditional on-site fabrication inputs by 50 percent and injuries by 80 percent, and capturing a 40 percent off-site productivity benefit, to drive towards lowering future costs by 20 percent.’

‘At the heart of a modern construction industry must be a new psyche addressing how a measurably better deal will be delivered to its customers. This means more for less. It does not mean that those who work most effectively as a part of construction’s future value chain should work for less, but they should work smarter, better, safer and faster. In a digital, industrialised and global construction economy there is no room for selective gestures to any of these core drivers, just as they have in other modernised industries.’

The congregation of the industry transformations outlined here, lead us to the view that a new language and approach may be justified in developing a response to the complex issues surrounding ‘*non-compliant building materials and work*’, and products containing asbestos. These matters are now multi-jurisdictional in nature and present an opportunity for the Australian government to assume an important national and international role in influencing how all **building products** and **work** may be more effectively regulated in the future. Traditional industry customs and practice will require re-imagination in the context of a modern construction era ahead of developing new solutions on this occasion.

We draw the Committee’s attention to the profile of businesses that will be most affected by the responses that could come from this enquiry. Many of the enterprises that will become important players in the modern construction economy both in Australia and internationally will be SME’s or start-up organizations whose businesses will be born in a digital and multi-jurisdictional market place. While the Committee may find for interim actions to curb the use of non-compliant building materials and work, a once in a 50-year opportunity is now present, that demands a more forward looking strategy. It would be a national tragedy if the opportunity to lead in this exciting new space was squandered by marginal changes and by playing to voices and interests that may soon be less relevant.

3. Introduction to this submission – taking stock

3.1 The concept of ‘*construction impairment*’ to redefine non-conformance

The transformations now affecting the construction industry will have profound implications for the future of construction standards, regulations, certification and licensing processes. The use of the term ‘*non-compliant building materials and non-compliant construction work*’ is a symptom of larger construction industry challenge. The use of the term ‘*construction impairment*’ could be used to incorporate the larger industry challenge suggested here.

The term ‘*construction impairment*’ could be adopted to include scope faults, design faults, inappropriate material sourcing, manufacturing faults, fabrication and assembly faults, commissioning, testing and warranty faults, completion and operational data faults and so on. This broader descriptor could bring attention to the systemic fault sources that collectively contribute to the root causes of non-compliant materials and work.

Other industries anticipate and deal with the multi-jurisdictional issues that their products and services must navigate. The construction industry will, in short time become no different. While the traditional construction industry has a local fabricate on-site bias, a modern construction industry will be more off-site inclined. This rapidly evolving eventuality will affect all of construction’s transaction flows and for many their commercial relationships.

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

3.2 Rethinking Construction Transaction Flows and Commercial Relationships

No-one should imagine a new era of soft construction procurement and pricing. Quite the opposite will apply. The expectation of *'in-full and on-time'* will assume its full meaning. This will be achieved through smarter project scoping, procurement and organisation. The sophistication that will soon become the norm in future construction project delivery will enable the removal of many of construction's traditional systemic inefficiencies. As discussed in *Measuring Construction Transformation and Improvement*, first movers will then reflect their more able capabilities and smarter practices in lower construction prices. *'Better for less'* will become construction's new norm.

The challenge for policy makers and regulators will be making sure they anticipate these transformations and enable their early adoption. This will mean that new regulatory responses should encourage the coming transformations not hinder them. Regulators will progressively be able to retreat to a watch and enforce only function in place of their past role of trying to lift industry standards and compliance through a one size fits all approach.

Filling the international compliance and *'impairment risk management'* space will be the insurance industry. Driving this, is the need to provide product and fabrication certification for the growing amount of construction inputs now being performed off-site and off-shore. The traditional norm for triggering the construction payment mechanisms was valuing work performed in accordance with the contract, when it was installed on-site and physically observable. Increasingly the balance is tipping to more of the contract sum having to be paid before construction materials and work are dispatched from their place of source or manufacture. It is possible that as much as 60 percent of construction inputs may be paid for off-site. To-date the only underwriters who have shown a capacity and interest in this business is Lloyds Insurers in their collaboration with the UK's Build-Off-Site organisation.

This development is game changing. Lloyds now offer Build-off-Site members access to their Build Off Site Payment Assurance System (BOPAS). We will discuss BOPAS further in this submission. For now, what is important is that BOPAS is a product that provides construction customers (and their financiers) with a Lloyds assurance that covers both off-site and on-site inputs. Pricing of the risk follows an evaluation of each supply chain member's individual capability and risk profile. There is a direct correlation between a vendor's riskiness and the price they pay. This approach rewards the most able and ethical vendors, and disenfranchise the others. It is not a *'one price for all'* model as is the case for some warranty insurance schemes. The role of material and work certifiers in this model changes dramatically. They have a new master who is focused on risk mitigation and excellent supply chain relationships. There will be no ambiguity in the expected capability of these certifiers.

Insurance companies in effect aggregate the purchasing power of their customers. Insurers have for some time been adapting their business models to provide customers with individual risk based premiums and more intimate services. The momentum for this has more recently been fueled by the motor vehicle industry. Insurers are now envisioning declining individual car ownership and growing number of mobility service aggregators who will manage risk profiles to lower costs and lift their competitiveness.

These developments are not unexpected. Construction customers have long been dissatisfied with the traditional shortcomings of construction compliance, warranties and compromises.

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

Insurance companies know that buildings and infrastructure is expected to stand the test of time. Often for more than 50 years. In the past they have been mostly forced into underwriting buildings and infrastructure on a global pricing basis without insight into the inherent ‘*impairments*’ that may have been embedded into them during construction or because of neglect afterwards. Insurance companies are becoming rapidly sensitive to the new risks associated with construction. The two most obvious are;

- New design technologies, construction materials, composites, off-site fabrication and on-site assembly practices. These risks are exacerbated where there are industry skill shortages, minimum standard regimes and multi-jurisdiction sourcing,
- The increasing impact of climate change and extreme weather conditions on the built environment. Insurance companies anticipate as much construction that already exists will be matched with new construction and replacements over the next 50 years.

Why would insurers not intervene to mitigate these risks if there were market transformation opportunities taking place as now unfolding in construction. Products like BOPAS are game changers that it will soon shift from proof of concept to wider multi-market application. This is before insurers become more interested in global standards for construction and undertake far greater scrutiny of ‘deemed to comply mechanisms’. This won’t be red tape that industry can howl down, and for the first time the best operators will be rewarded.

3.3 Construction and asset financiers will not be able to avoid ‘*impairment risk*’

The digitization of construction processes will soon enable massive transformation in construction transaction protocols and practices. The first step change will be the ability to direct pay vendors in the supply chain without the payment passage having first to reside in the hands of a head contractor for 60 or more days. Technologies such as block chain will not only offer long overdue chain of custody and compliance; the ritual of monthly construction progress claims will be replaced by real time processes that can match progressive value add. This will change many constructor business models and recalibrate industry insolvency risk.

More importantly construction inputs from source, through manufacture, delivery, assembly, acceptance, operation, maintenance, adaptation and eventually end of use recycling will be governed by most, if not all of construction’s pieces and parts having their own digital identifiers. This will enable tracking through the design, procurement, the build process and afterwards. As insurers pay more attention to compliance and ‘*impairment mitigation*’ financiers for the first time will have a direct line of sight to construction performance and certainty. We would expect that in time (at least by 2025), new construction and asset owners will experience lending conditions stating the need for insurance compliance certificates.

The digitization of construction’s pieces and parts will introduce similar applications to construction enterprises and practitioners. While most do not fully understand the digital information that exists about them or their businesses, its existence will soon play out more potently. Constructors who habitually perform ‘*impaired work*’ or leave a trail of damaged enterprises will find the doors to continued operation that way will close. In a digital and social media, driven economy the shadow construction industry will have no place to hide.

Financiers will have no choice but to recognise that ‘*impaired construction materials and work*’ erode the value of the assets and securities offered to support the funding required to undertake future projects. Unchecked these will in effect be ‘*impaired loans.*’ In a globalizing

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

industry, this will be fertile ground for construction businesses with client-focused, information technology-savvy entrepreneurs to change the way projects are delivered’

Insurers and Financiers have the most at stake in the assurance of tomorrow’s built world. Their interests are multi-jurisdictional and in reality, their reach goes way beyond that of domestic regulators and industry associations. While the way forward should be open to all, any worthwhile response to the issues surrounding ‘*better construction for less*’ and a serious assault on the mitigation of ‘*construction impairments*’ will soon turn on different influences.

3.4 Implementation and national capability building

Australia has a unique opportunity to be a leader in a ‘*coalition of the willing*’, to leverage an international position in the global construction supply chain that well exceeds its presence in physical construction turnover. This opportunity is innovation based and SME focused. Implementation success will turn on voluntary collaboration, and not depend on new legislation or industry wide mandated change. Those who see the opportunity as the way forward should be at the core of its genesis, and implementation should not be hindered by those who don’t. There is sufficient enforceable regulation and laws to deal with the immediate issues the subject of this enquiry. Enforcement is the most applicable response in the short to medium term. Fostering an innovative effective construction industry is different.

We propose the Commonwealth provide the necessary leadership and seed funding; to establish a national implementation Working Group tasked with a ‘*better construction for less*’ mandate. The Working Group would organise a collaborative effort to implement a new national construction culture and capability. Participation should be discretionary. The following parties would be invited to make up its core;

- Willing State and Territories who are prepared to invest in scoping the project and offer early industry enabling resources. Beyond this they would need to commit to providing a small group of ‘proof of concept’ projects between 2020 and 2025,
- The Commonwealth and the participating States and territories will commit to share the necessary seed funding that will enable this project until at least 2025,
- Insurers and financial institutions who have a vested interest in an industry where ‘*construction impairments*’ are mitigated and eventually made inconsequential,
- A collaboration of universities who are willing to bring their combined construction, business, computing and law resources to the project to deliver the modern learning and capability building components to bring this project to life,
- Constructors and other stakeholders who want to be first movers in this endeavor.

Implementation must be scalable and introduced in a realistic time frame. The window of opportunity for an Australian (and potentially New Zealand) led initiative of this type will pass quickly. As a guide the Committee should envisage that the implementation working group should ensure that the first demonstration projects commence in 2020 with a view to having evidence based confidence that the project will have its own momentum from 2025. To achieve these outcomes the following stepping stones may be appropriate;

- A resolve that all construction materials and work to be incorporated into the Badgerys’s Airport from 2020 onwards will adopt the procurement methods that the ‘*better construction for less*’ principles to be determined by the working group,

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

- Each of the collaborating states and territories should commit to conduct at least 5 model new projects each of at least \$5m in value every year from 2020 to 2025.
- A commitment from the participating insurers and financiers that they will work towards having enabling products available from 2020 (Modeled on BOPAS),
- A pool of at least 100 SME's be invited and prequalified to participate in an implementation construction panel by 2020. These enterprises will have identified the supply chain roles that they envisage as central to their futures and the project,
- Private sector construction clients should be able to join the collaboration as they choose, and the implementation working group should establish an appropriate in-cash and in-kind framework to encourage the widest number of early adopters.

If ever there was an industry transformation and modernisation need, the construction industry would surely rank as a priority. Construction is under measured in the economy, and despite there being well accepted economic understanding of construction's ability to have a positive impact on the prosperity of the wider economy, the industry lags in embracing the better business practices that other industries see as the minimum norm. Australian construction is unprepared for a future digital, industrialised and global market. The Committee is well placed to adopt a bi-partisan position on this need and opportunity.

It is surely time for yet another review into Australian construction to achieve more than has been the case historically. This is not a time to defer to the existing institutions of construction to do better. The industry and the Australian community expect more.

4. Detailed response to the Committee's Terms of Reference

Australia's construction industry has systemic impediments that contribute to the '*product and work impairments*' that have been referred to the Committee. There are many examples of these impediments but perhaps the most significant is the standard forms of construction contract. These contracts have evolved over many decades to a point where their almost static ability to adapt to the needs of a modern construction industry appear to be remote. These standard form contracts are a product of multiple interests that each look to maximize their standing in the construction procurement and delivery chain, while each look to ring-fence their respective accountabilities in the chain of assuring '*in-full, on-time*' built outcomes to construction clients. This ring-fencing could be seen as a root cause for this enquiry.

We believe that the following brief, non-legal overview of these contracts is needed to usefully precede our general response to the Committee's terms of reference.

4.1 Traditional Contracts – tolerate non-compliant materials and work

The current versions of Australia's construction contracts date variously back to 1992. In a 2014 survey by Melbourne University, of the 295 enterprises surveyed, 250 respondents reported they used a standard form. Of these, 22.5 percent used AS4300-1995 (this is the design and construct contract of the AS2124 series), 17.9 percent used AS4000-1997, 16.7 percent used AS2124 -1992, and 14.2 percent used AS4902-2000. A new standard form AS11000 was due for release in 2016. This contract is proposed to modernize AS2124-1992 and AS4000-1997. This contract has not yet been released and appears to mainly pick up on operational matters such as differing jurisdictional laws such as security of payment legislation and other clarifications. Most standard forms are modified. A typical Home

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

Building Contract is the NSW standard form was updated in 2015. This responds to the 1989 Home Building Act in NSW.

Over the last 15 years that advent of new technologies such as BIM (3D) have started to displace Computer Aided Drafting (2D). More recently the use of Designed for Manufacture and Assembly (DfMA) technology has entered the construction market as more off-site fabrication is normalised. Very few if any construction drawings are hand drawn these days. To extract the best out of integrated design and manufacturing technologies like DfMA new procurement transaction protocols, methods and culture is necessary. The full potential of these new technologies is defeated by traditional contract procurement methods. The pursuit of *'better construction for less'* and *'impairment free construction'* outcomes is frustrated when many of these applications can only start being used after a traditional contract has been awarded. Traditional contracts maintain boundaries between the professional design inputs and construction responsibilities. These boundaries go to sustaining the industry's deeply embedded risk adversity and avoidance of accountability. They are not gateways to enabling the modern construction value chains we have discussed in this submission.

Common terms in these contracts include;

- Formal Instrument of Agreement – shall be forwarded to the Contractor within 28 days after the award of the Contract with a request that it be returned within 14 days,
- Supply of Documents – the Principal shall supply 5 copies of the Drawings, Specifications and Bills of Quantities (if any) and other documents required by the contract. These shall remain the property of the Principal.
- A Superintendent shall be employed by the principal to administer the contract. Some of the Superintendent's obligations and defenses include;
 - Acts honestly and fairly,
 - Acts within the prescribed timeframes and in the absence of a prescribed timeframe reasonably,
 - Arrives at a reasonable measure of value of the work, quantities or time,
 - Does not warrant to the Principal or the Contractor that the Works comply.
- Lodgement of Performance Security – Shall be provided by the Contractor within 28 days after the award of the Contract,
- Subcontracting – The Contractor shall not without the written approval of the Superintendent subcontract or assign work, the Contractor shall provide copies of the intended Contracts for the works to be subcontracted. Any consent to subcontract shall not relieve the Contractor for any liability or obligation under the contract,
- Statutory Requirements – The Contractor shall comply with the requirements of, Acts of the Commonwealth, Acts and Ordinances of the State or Territory in which the Work or any part is carried out, Ordinances, Regulations, By-laws and Proclamations under the Acts and ordinances and, Persons acting in the exercise of statutory powers enabling them to give directions affecting work under the contract,
- Setting out the Works – The Superintendent shall provide the contractor the information and survey marks necessary to set out the Works,
- Quality Assurance – The Contractor shall if the requirements are so stated in the Contract, plan and maintain a quality system to enable monitoring and quality auditing, and provide the Superintendent with access to the quality system, the quality system shall be used as an aid to achieving compliance with the Contract,
- Defective Materials and Work – if the Superintendent discovers Materials or Work that are not in accordance with the Contract, the Superintendent may direct rectification or the Superintendent may direct a Variation to the Contract to value acceptance of lesser quality or defective work,
- Certificates of Payment – The Contractor shall deliver to the Superintendent claims for payment, within 14 days the Superintendent shall issue the Principal a certificate stating the amount that the Contractor is entitled to be paid under the Contract, within 28 or 14 days (depending on the contract) the Principal must pay the Contractor, payments are made on account and do not evidence acceptance by the Superintendent or the Principal that the Work has been performed satisfactorily.

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

- Unfixed Plant and Materials – the Principal shall be obliged to pay for any item where the item is to be imported into Australia, provided the Contractor has given the principal a clean on board bill of lading, or its equivalent, drawn or endorsed to the Principal, and where appropriate a custom's invoice for the item or, if the item is listed in the Annexure and which is not an item to be imported into Australia, provided the Contractor has paid for the item, and the item is properly stored, labelled the property of the Principal and is adequately protected.
- Defects Liability – as soon as possible after the date of Practical Completion the Contractor shall rectify any defects or omissions in the work. The Contractor's performance security is normally reduced by 50 percent at Practical Completion.
- Warranties and As-Built documentation – In addition to the Contractor claiming Practical Completion, the Contractor will be obliged to provide the Principal with warranty certificates and records of testing that the Works are compliant.
- Final Certificate and Release of performance Security – usually 12 months after Practical Completion and following the rectification of known defects and or omissions the Contractor's remaining performance security is released. There is provision for extended Professional Indemnity and Statutory performance obligations in design and construct contracts and in certain other circumstances.
- Novation of Designers to the Contractor in Design and Construct Contract – it is usual for some or all of the designers who prepared the Principal's tender documents to be novated to the Contractor. The Contractor then assumes the obligation to complete the remaining design and accepts responsibility for its fitness for purpose, including prior design. The role and influence of the designer at this point changes as the project costs and the management of design intent is then assumed by the Contractor. The designer also becomes dependent on subsequent payment from the Contractor. These designers attest to the Work being in accordance with the Contract in order to facilitate their progress payments.

The list of contract provisions cited here are not exhaustive. Their purpose is to point to the prospect that projects may be conducted, certified and paid for, without any reliance on there being compliant with the Contract. It is often the case that projects commence their functional life with a mixture of '*unidentified impairments or compromised components*' that may be impractical to make good. This prospect is exacerbated where new construction materials and assemblies test the boundaries of existing minimum standards and deemed to comply certifications are supplied in their place. The role of certifiers is a vexing industry question.

More recently, another layer of material or workmanship compromise has become normal. This turns on the growing shortage of skilled trades people and experienced supervisors. A regularly offered excuses for '*impaired materials or work*' is that it meets '*current industry standards*'. These standards by most accounts are falling and customer projects are compromised. The mechanisms to seek redress are both expensive and frustrating.

Construction documents often refer to the term '*workman like manner*'. The term, '*industry standard*' refers to the desirable standard of quality of work and materials on a project.

A contract to perform work generally imposes on the contractor a duty of care to perform the work in a '*workman like manner*'. Seldom do contracts define '*workman like manner*', but the implied covenant goes something like this; 'By agreeing to perform the work a contractor promises (a) to use reasonable skill, care and diligence, (b) that the work will be performed in a workman like manner, and (c) that the work, when completed, will be reasonably fit for its intended use'. In the evolution of '*workmanlike manner*', the term has gone from 'work as customarily done by other contractors in the community', to 'that degree of skill, efficiency and knowledge possessed by those of ordinary skill, competency and standing in the particular trade or business for which the contractor is employed'. These are vague measures.

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

Unless plainly set out in a contract, the use of measuring the degree of skill against others in the community for the term ‘*workman like manner*’ is an inoperable notion. It is important for contractors to continually evaluate the quality of their performance. In that process, it is critical that the contractor understands the standard against which that evaluation must be made to comply with the requirements of the contract and the law. Unfortunately, even this clarity is defeated by the terms and operation of the standard forms of contract in Australia.

Modern Construction is headed into uncharted waters. 2025 is now 8 years away. In the same period, the disruptions of Uber and Airbnb have completely transformed their respective markets. Governments were unprepared. Should the traditional motor vehicle and hospitality industries have seen this coming. Who knows? Should governments and the construction industry see this coming as a similar scenario unfolds in construction? We think so.

In a globalizing industry, construction businesses will need to be more agile as they face competition from client-focused and information technology-savvy entrepreneurs changing the way projects are delivered. New managerial, contractual and compliance initiatives will need to respond to the impact of technological change and lift industry effectiveness. These challenges pose some ‘*wicked questions*²’ for modern constructors and it now seems time to explore more viable, possibly ‘*wicked solutions*’. Traditional contracts are not the answer.

The UK’s construction industry is perhaps more advanced in the deployment of pre-built construction inputs than other global counterparts. This advancement has brought on the question of payment for off-site inputs earlier than elsewhere, but those pressures are now present in the Australian and New Zealand construction markets. In the UK, the off-site industry is represented by Build-Off-Site³ organisation. In a collaboration with Lloyds Insurance Register a new enabling insurance product known as the Build Off-site Property Assurance Scheme (BOPAS⁴) has been developed to provide surety to construction customers and their project financiers that goods and services being paid for off-site are compliant with their respective contracts, jurisdictional standards and ordinances.

BOPAS provides a risk-wrap to construction customers that embraces the inputs of all the parties including designers, manufacturers and assemblers. The product assesses and prices construction performance risk based on the independently assessed capabilities of each value chain member. This in effect, enables a compliance chain of custody to be established for every construction input irrespective of where the goods or services were performed or originated from. BOPAS does not average risk pricing across the industry. Individual input risks are assessed and priced accordingly. The performance underwrite of these inputs may be extended to 40 years. The following diagram provides a brief snapshot of the process.

In this scenario, the roles of construction superintendents and certifiers would change. Superintendents would become administrators and their traditional qualified certification role will become less relevant. Certifiers will assume a new and higher order. They will become

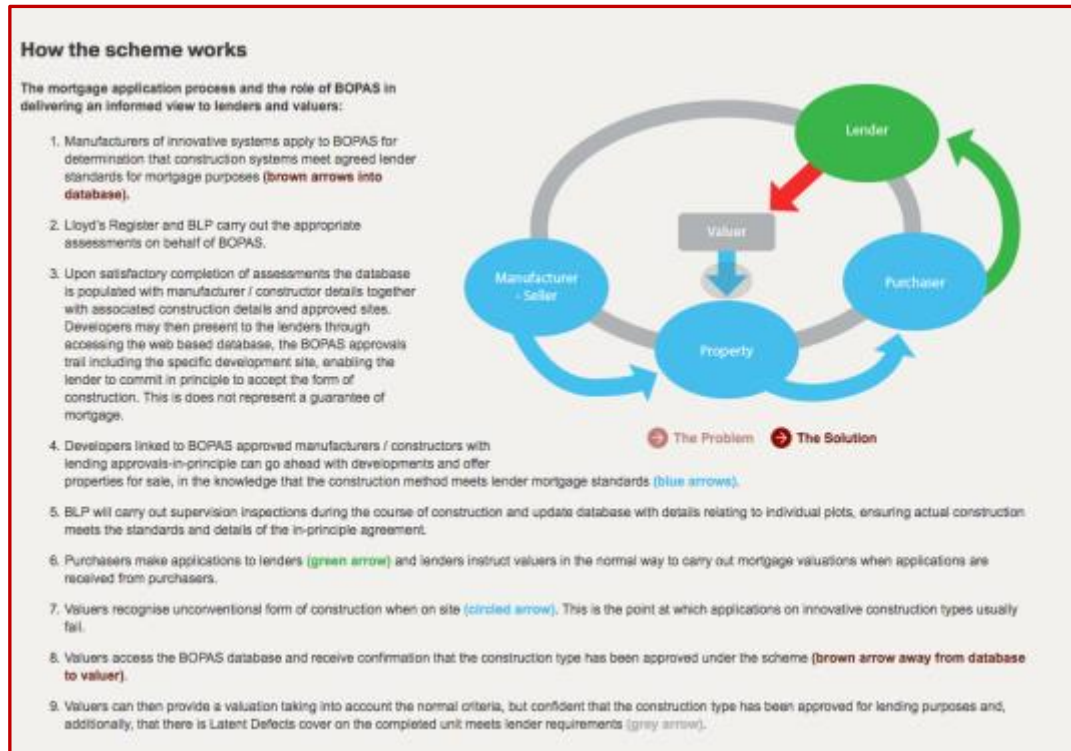
² <https://www.augi.com/articles/detail/built-wicked-solutions>

³ Buildoffsite: <http://www.buildoffsite.com/>

⁴ BOPAS About: <http://www.bopas.org/about>

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

part of a sophisticated risk management insurance industry infrastructure that feeds into the pricing and compliance needs of insurers. Far better construction outcomes are probable.



A new cohort of construction professional will be needed by the insurance industry. Some professionals have already adapted and now play vital risk management roles in insurance underwriting businesses today. Building materials and projects procured, incorporated and accepted under this new assurance model will have far less *'impairment risk'* than in the past.

We believe that the Senate Economics Committee's enquiry into non-conforming Building Materials and Products containing Asbestos is only addressing the very tip of the iceberg that touches construction industry *'impairments'*. There are just as many local non-conformances being built into domestic construction as there may be from products sourced elsewhere. In the background, global construction supply chains are re-aligning and best practices will increasingly become the order of the day. Apart from this onetime opportunity to extract better value from Australia's construction industry's deliverables, it's a onetime opportunity to join and influence a global supply chain.

This submission is intended to help reframe what could become an inward looking raising of barriers to market entry for offshore product and service providers by the deniers of these challenges and those who would preserve the status quo at considerable cost to our economy. Australian construction needs to step up to the challenges and opportunities now on offer.

4.2 Looking back at earlier enquiry outcomes, and towards the future

The former Senate Economic Reference Committee produced an interim report on its enquiry into non-conforming building products in May 2016. The Committee had at the front of its mind Melbourne's Lacrosse building fire which occurred in November 2014. It could just as easily have had more pressing issues that may have arisen due to **non-complying building**

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

and work performed in Australia, such as the Bankstown apartments fire of September 2012 that claimed the life of a young resident. Or the Committee may have been confronted with other non-conforming building projects that could have resulted in similarly bad outcomes. The Committee could have been reporting on the potential consequences of the recent spate of crane collapses and incidents that have occurred over the heads of the public. Any of these incidences could have informed a similar report title – ‘*Safety, not a matter of good luck*’.

Safety during the construction process and afterwards is serious business. It is why we have selected Lost Time Injuries as one of four key measures that could be used to lower the construction industry’s current record by 80 percent in *Measuring Construction Transformation and Improvement*. Measuring safety on its own is insufficient to build a resilient response to lowering the recurrence of workforce injury and ‘*impaired materials and work*’. Business system improvement usually turns on achieving better outcome across several key factors that, when combined inform more strategic and lasting outcomes. Raising the level of building materials and work compliance requires a similar approach.

Reading through the various submissions to the earlier enquiry and then the summary of those submissions in the Committees interim report we respectfully differ with some of the proposed actions. They are unlikely to provide the sort of resilient solutions that are now needed for the modern construction era. There are two ways forward;

1. Applying the existing standards and regulations more rigorously. There are sufficient laws and contractual obligations, that when combined will lead to better built outcomes. These should be more visibly and actively applied. There are positive suggestions amongst the submissions made to the earlier enquiry about improving installer and supervisor capabilities and increasing the responsibilities of certifiers. Raising Australian centric standards in the face of clear domestic shortcomings however, is in not a viable proposition in the longer term. Change cannot be imposed,
2. Establish a ‘*Better Construction for Less*’, 2025 Working Group to help prepare for a more dynamic and opportunity rich future where best practice and innovation displaces minimum standards and inward facing enterprise cultures.

This effort should be directed at first movers, but be open to others to progressively join. Be prepared that many existing construction businesses will elect to lawfully carry on with business as usual, up to the point where they can no longer compete on price or product. By 2030 Australia should have a vibrant core construction cluster, made up of those who have adapted and those who have started up. This cluster should be networked out across at least Australia, New Zealand, Singapore, Malaysia, India and the UK to build towards the leverage and reach discussed earlier in this submission. This reach should enable Australia’s smaller scaled industry (SMEs) to build into a larger long term global construction footprint. The same old faces representing the same old interests may not be suitable contributors to the 2025 Working Group.

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

World Economic Forum's 2016 report addressing broad industry views on Shaping the Future of Construction⁵ and their reasoning's on Economic Relevance, Societal Relevance and Environmental Relevance is strong. Two of the predicted megatrends point to;

- Construction being the world's largest consumer of raw materials and construction objects accounting for up to 40% of the world's CO2 emissions,
- The population of the world's urban areas increasing by 200,000 people per day,

Building Australia's capabilities to embrace the opportunities presented by these trends should not turn on inward looking defenses of interest groups who miss the bigger picture.

There will be some on the Committee who may find these questions to be beyond their current remit. Notwithstanding, the Committee is part of the Senate's Economic reference function, and member Senators sit in on many enquiries, some related such as; Construction Industry Insolvency. Other remits may seem distant to the one at hand. Enquiries surrounding the changes in the global motor vehicle industry and the impact on Australian manufacturing jobs would have been amongst the most recent. Looking for opportunities to transfer the motor industry's latent capabilities in advance manufacturing has received a lot of attention.

The recent establishment of an Australian Research Center in Advanced Manufacturing for Prefabrication at Melbourne University will look to exploit the motor vehicle building capabilities, mainly in the Victorian and South Australian economies. Early positive feedback about how technologies such as BIM, DfMA and prefabricated housing are showing how construction can learn from the motor vehicle industry in applying lean construction practice.

Before departing from this conversation and the construction parallels with the motor vehicle industry it would be remiss not to tie this back to developments in the global insurance markets. Every industry is reappraising the way insurance risk is identified, managed and priced. The days of just accepting the status quo in traditional industries are rapidly fading.

Construction is no exception. The underwrite fees are too important to insurers. What, and how construction insurers underwrite construction, including '*impairment risk*' will evolve just as it has in other industries. Insurance has the unique ability to transcend differing jurisdictions and geographies. It can apply consistent and rigorous risk management protocols. Variances can be priced accordingly.

The global insurance industry is contemplating suggestions that their future premium revenues may decline by as much as 30 percent by 2030 because of declining personal car ownerships, and the re-aggregation of fleet ownership, operations, maintenance, driving and insurance. Along with IBM, KPMG⁶ have recently produced an instructive overview of these developments and their likely impact on motor vehicle insurance premiums. And, PWC's recent report on the impact of a 'connected car'⁷ industry is further evidence that the way insurance is being re-calibrated world-wide. Construction insurance will not be immune.

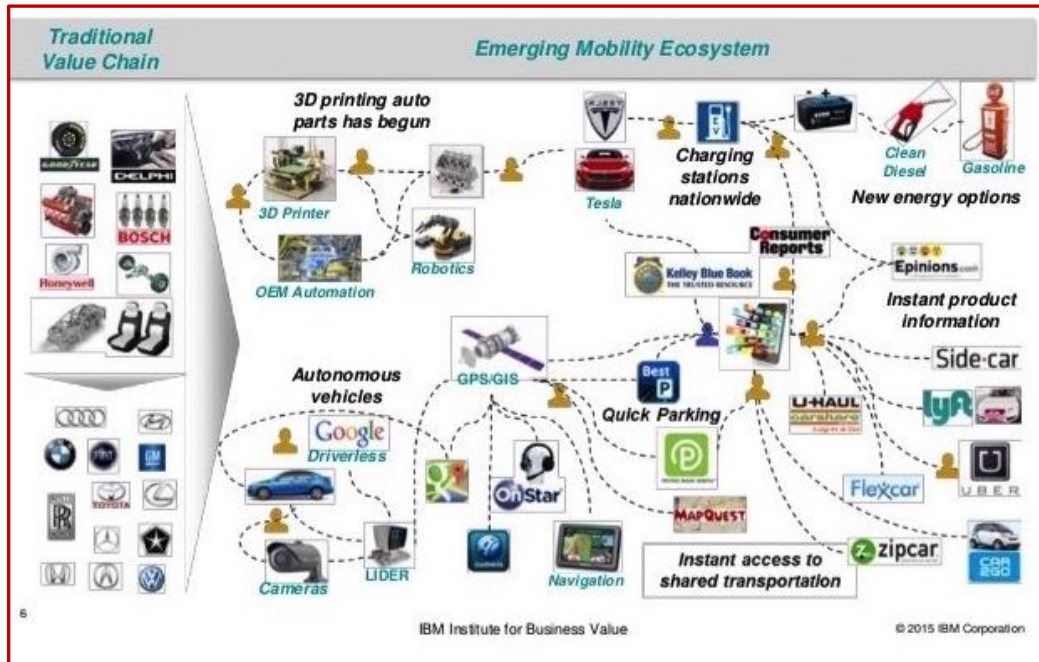
⁵ WEF: http://www3.weforum.org/docs/WEF_Shaping_the_Future_of_Construction_full_report_.pdf

⁶ KPMG on Auto Insurance: <https://home.kpmg.com/content/dam/kpmg/pdf/2016/05/Autonomous-Vehicles.pdf>

⁷ PWC Connected Car report: <http://www.strategyand.pwc.com/reports/connected-car-2016-study>

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

The global insurance industry is currently determining how it will respond to the rapidly changing mobility services market. This challenge is not just about ride sharing and the collaborative economy. It's about changing patterns of vehicle ownership, how the makers of vehicles will make and support massive fleets of new vehicles where users only call for mobility on a needs basis. The following diagram show how broad the issue is.



The prospective role of tomorrow's construction professional and the caliber of the certifiers that will be engaged directly by insurers to manage construction and property risk seems positive on every front. The industry's customers and the public will get a better deal. Better buildings at a lower cost. The days of diminishing the role of construction and engineering certifiers, by reluctant clients looking to cut corners in appointing these keepers of public confidence in the built world will rightly become history. Yes, this transformation may take 20 years to mature, but mature they will. Over that time the new opportunities for constructors will abound. How the Committee responds now will influence these outcomes.

4.3 General responses to the Committee's terms of Reference

Enquiry into Non-Compliant Building Materials and Products Containing Asbestos⁸

Note: this section has been completed by David Chandler OAM, FAIB
Construction Industry and Housing Industry Expert.

A. Terms of Reference – responses

Non-conforming building products:

- a. the economic impact of non-conforming building products on the Australian building and construction industry;

Response: The rise of imported construction materials and products is not adequately reported in the national accounts. Some prefabricated components and timber are

⁸ Terms of reference: http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Economics/Non-conforming45th/Terms_of_Reference

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

collected in other measurement groupings. The degree to which some or all those materials and products may be non-conforming would be difficult to judge and it would be unreasonable to paint a one view fits all scenario.

The difficulty for Australian Construction is that there is no line of sight to non-compliant (impaired) materials and installed work more broadly. It is possible that some imported materials and components may only make up a small proportion of the overall picture. The role of certifiers across the value chain is sufficiently compromised to justify a belief that there are latent building construction risks that have yet to present themselves.

I have inspected hundreds of buildings over the last 5 years and have recorded photographic evidence ranging from improper use of materials in school buildings, non-conforming installations of prefabricated housing and public buildings, public venue occupancy without proper fire compartmentation and prescribed certification combined with obvious non-complying imports.

Perhaps the most concerning and most frequent incidents occur when a manufacture provides a product installation specification along with a carefully crafted product warranty disclaimer that avoids obligation if the installer has not followed these directions precisely. In these instances, customers are then given a bundle of mostly self-certified compliance statements which have not been independently verified. The two parts make any warranty meaningless.

- b. the impact of non-conforming building products on:
 - i. industry supply chains, including importers, manufacturers and fabricators,

Response

The construction industry has an inherent culture of squeezing prices. Sometimes this process involves declared substitution of one product or construction method, at other times the squeezed contractor, supplier or sub-contractor takes it upon himself to vary the prescribed standard.

Deemed to comply variants of industry standards and an increasing use of terms like '*industry standards*' are frequently appearing to support the acceptance materials and installed work that is neither compliant with a construction contract or formal industry standards, especially for tolerances. The meaning of '*tradesman like*' as a standard also plays into a growing level of acceptance of near enough is good enough.

In other instances, work is being supervised or accepted by persons that have neither the technical ability or self-confidence to challenge clearly non-compliant materials or work. Later discovery of that work (if it occurs) is then confronted by the impracticality of dismantling subsequent work to make good. A compromise results and the project is '*impaired.*'

The impact this has on the supply chain is damaging. Honest brokers miss out when competitors under quote or willfully substitute lesser materials or workmanship. The able players are often forced to look to cut corners and hope they will get away with it. If others do, why not them?

Other examples involve contractors proposing alternates or late innovations where possible cost savings may be identified after the contract is awarded and very often when construction is underway. This normally results from contractors identifying that their tendered price is or was always inadequate to do the contracted work. There are examples of supply chain businesses



Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

having an order, investing in expensive prototypes and then being abandoned for a clearly cheaper and less satisfactory alternate. These products quickly become evident.

- ii. workplace safety and any associated risks,

Response

I am aware of and have observed many workplace safety issues. In some instances, these have involved items like bearings for cranes that have been made with counterfeit materials. Mostly the safety risk I observe is a lack of anticipation of the changed on-site situation when an advanced pre-assembled component arrives for on-site installation. Suddenly a safe work edge is no longer as it was and insufficient prior actions have been taken to avoid this risk. This situation is not confined to the Australian industry.

- iii. costs passed on to customers, including any insurance and compliance costs,

Response

Impaired or compromised construction work is an increasing risk. When this work has gone undetected the latent consequences remain to be stressed or discovered on another day. Often well after the issuances of final certificates and the release of warranty obligations. Most customers reluctantly bear the non-conformance as they have neither the means or ability to seek redress. The housing industry reflects this situation most. When building owners become aware of an impairment of their asset most know that to expose it will affect property value.

There seem to be very few instances where the value of a contract is written down due to non-conforming materials or work. For most it provides a chain of custody and possible later indemnity tag everyone would prefer to forget and move on from. It is possible that 2-5 percent of installed construction has some form of impairment. In an industry turning over +200 bn pa the accumulating value of these impairments and their potential contribution to avoidable system failure is expensive.

- iv. the overall quality of Australian buildings;

Response

This is a subjective question, but it needs to be answered. My general opinion is that construction quality in Australia is variable. The variation can be observed between states and because of differing contract forms. Design and construction projects have the most consistent shortcomings.

There are no simple metrics that could guide the measurement of this challenge.

Other observations show how low quality external treatments (mostly residential) deteriorate in short time as contractors and suppliers seek to lower cost at the expense of quality. Other observations show that despite prior building analysis to meet Natters and Green Star rating systems, the use of buildings suddenly calls for new heating and cooling to make up for installations that did not work.

- c. possible improvements to the current regulatory frameworks for ensuring that building products conform to Australian standards, with particular reference to the effectiveness of:

- i. policing and enforcement of existing regulations,

Response

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

In the short-term enforcement of the regulatory system would help. It would help to turn around an increasingly indifferent culture, which is the product of one size fits all regulation and licensing where it applies.

Policing is a wider challenge in an industry where governments have sought to shift the burden of compliance back to industry. Self-certification and independent certification is not a policing function.

Site safety monitoring. The various remnants of agencies like Workcover are a good example. They have limited resources and seem missing in action. They are intimidated by the big players and mostly ignore the rest.

Irrespective of the level of policing, government should take on the enforcement function. This is often an expensive and risk fraught process that ordinary citizens or smaller clients have no appetite for. The reality is that mounting a serious publicly funded effort to drive a turnaround in compliance may not be practical. Industry associations may not support it.

Added to these challenges is the differing regulatory frameworks that exist in Australia. Australia does not have a one country strategy to deal with its domestic compliance challenges, let alone when these are cast into a global setting. With less than 2 percent representation in the global construction mix, Australia and New Zealand will need new strategies to identify what standards they want, what the reference points will be and how will they innovate on the new construction frontier.

In the end, only an intervention like or similar to BOPAS will be viable. That combined with new digital product coding and tracking technologies, new construction procurement arrangements that reflect the modern transaction realities of a transformed industry and buildings all attracting a conformance rating will turn around the current slide in building standards.

- ii. independent verification and assessment systems,

Response

The current models of project materials and work compliance are inappropriate. They have been tweaked so many times that they now resemble a heavily bandaged corpse. Referral back to state and industry based committees simply enshrines the status quo. The thinking while mostly well intended is from inside the box and defensive in nature.

The most relevant forward thinking action that could be taken at this juncture is to rethink the problem that needs solving. This process needs to be transparent and not dominated by the current gatekeepers. This submission has proposed a transitional strategy that is directed to best practice measures. Following this will be a need to publicly fund a rapid roll out of the capability building learning and application tools to support this work. Being a first mover in this space could enable Australian construction professionals to fill the early and most influential places in a new global construction compliance market. Having widely dispersed leaders across global construction markets with respected capabilities in building materials, construction methods, the digital economy, international trade and academic networks who can sit at the future global construction standards table should be advantageous.



Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

- iii. surveillance and screening of imported building products,

Response

There are few choices and many opportunities. Opportunities to create world adopting applications of new digital construction tracking technologies is an example. Emulating the way forest, food, pharmaceuticals and aviation chains of custody work, require no invention. Overlaying other emerging technologies such as blockchain could enable a modern and scalable solution can be developed over the next 5 to 7 years. This may be as simple as establishing construction value chain trading protocols like those used by Apple or Airbnb.

There can be no avoidance that constructions pieces and parts will progressively become digital, they will carry individual identities and many will become far more active in their relationship with asset managers and users. Australia's CSIRO is at the forefront of many of these developments and could lead an enabling cluster to fast track the way ahead well before 2025. The window of opportunity is narrow and in a global context a collaboration involving NZ + Australia + Singapore + Malaysia + Indonesia + India and the UK could steal the march on others who may be pausing to take stock for now.

The presence of an Australian industry led initiative of this type could enshrine a valuable point of influence in the Modern Construction era for decades to come. Australia must be outward looking and engaged.

The industry and academic alignments that would be needed to mount the implementation of this submission to the Committee is vital. It needs upfront funding support, accountable performance measures and a mandate that mitigates the self-interests that have in the main been the root cause of this enquiry and continuity of the status quo.

- iv. restrictions and penalties imposed on non-conforming building products;

Response

There are already sufficient sanctions available to the regulators to enable the enforcement of the law. It will be when this happens that the industry takes notice. It would be premature to raise the barriers or to increase the sanctions currently available.

How to deal with inadequate superintendence and certifiers leading up to a new starting point is a challenge that should be put to industry. Should they have the metal to herald a changed industry setting only time will tell. It is inevitable that there will be fewer construction enterprises in Australia at some time in the future. Those that will make up the construction landscape at that time will be more able, better capitalized, have more robust business strategies and best practice will drive their growth, innovativeness and profits. Holding out hope to those with no intent to change or are still in denial to the MC reality seems wasteful.

- d. any other related matters.

Response

The Senate Economics reference committee leading this enquiry sits at a time of considerable public disenchantment with the performance of many public and industry institutions. There is most likely a level of skepticism as to whether anything of substance may come from yet another enquiry into the construction industry.

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

If ever there were a set of issues and circumstances that ought to be able to attract a bi-partisan approach, this must surely be it.

Respectfully, I put it to Senators that this enquiry must not end with a nod and more fingers in a dyke whose walls have long past its use by date. The alternate is a positive strategy that looks to broaden the base of a shrinking industry, to create more enterprise opportunities and secure local jobs. It will be possible to create an intellectual and physical hub to drive the capture of this perhaps 1 in 50-year recalibration of an industry that has started a massive change journey.

It is an opportunity to sense the winds of change now blowing stronger, to hoist a fresh sail and faster moving boat.

*B. Additional terms of reference—*asbestos**

Products containing asbestos.

The illegal importation of products containing asbestos and its impact on the health and safety of the Australian community, with particular reference to:

- a. the prevalence and sources of illegally imported products containing asbestos;

Response

Asbestos is an insidious product and its worldwide use must be stamped out. In some ways asbestos is a bit like the illegal harvesting of protected and threatened forests. While the forestry system of chains of custody to identify properly sourced timber products is not yet perfect a good start has been made.

The forest industry tracking of the custody and deployment of forest products started ahead of the digital technologies that are available today.

The progressive tracking of all construction products through digitised chains of custody by expert certifiers who respond to insurers as opposed to those with a lesser stake in risk management would be a powerful counter to the trade of asbestos impregnated products. Knowing that impaired products would be tracked to an impairment index attached to every new building (including in developing countries) and to anyone involve in installing such products would be potent.

If anything, Australia leading such an initiative as part of both an economic development strategy and an aid project would attract positive international regard. Deploying the technologies discussed in this submission would make it virtually impossible for financiers to make progress payments either at source or if installed. Cash flow in this context is a very loud voice.

- b. the effect of illegally imported products containing asbestos on:

- i. industry supply chains, including importers, manufacturers & fabricators,

Response

The relevant comments here are the same as for those made above.

- ii. workplace and public safety and any associated risks;

Response

The relevant comments here are the same as for those made above.

- iii. Homes, offices and places where people hang out;

Response

The uses and occupiers of these places end up bearing the worst of this.

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

- c. possible improvements to the current regulatory frameworks for ensuring products containing asbestos are not illegally imported to Australia, with particular reference to the effectiveness of:

- i. policing, enforcement, surveillance and screening of imported products, including restrictions and penalties imposed on importers and end users of products containing asbestos;

Response

The relevant comments here are the same as for those made above.

- ii. preventing exposure and protecting the health and safety of workers and other people affected by the illegal importation of products containing asbestos,

Response

The relevant comments here are the same as for those made above.

- iii. establishing responsibility for remediation of sites where illegally imported products containing asbestos has been found;

Response

The relevant comments here are the same as for those made above.

By way of further comment, the community pays an unreasonable price to clean up the unlawful dumping or use of asbestos, and for the health implications afterward. The price is economic and emotional.

The use of a globally effective chain of custody, compliance management technology and impaired building rating will be a very high barrier in this battle. Having the outcome underwritten by a major insurer will drive potency in risk management and transfer the public cost of failure.

- iv. coordination between Commonwealth, state and territory governments and the role of the Australian Government in coordinating a strategic approach to preventing the importation of products containing asbestos;

Response

The co-ordination options available to the Commonwealth, States and Territories are an essential medium term priority. The systems are weakened by the different jurisdictional rights claimed by each and system failure is easily directed elsewhere.

Setting a digital compliance date of 2025 supported by a risk management framework as described in this submission will be far more robust.

- d. any other related matters.

Response

If ever there was an issue that should be reason to drive all the changes discussed in this submission Asbestos must be it. Clearly there are no single silver bullets, so fixing illegal asbestos use should form part of a wider industry strategy.

We have pointed to how construction and the changes to its parts may be more accurately accounted for in the national accounts. Perhaps a special account should capture places where asbestos may turn up.

Except for the specific responses in section 4.3, this submission shares our joint views on the need for Australia to take a more contemporary view of the changes on foot in construction internationally. Given the scale of Australian construction activity as a proportion of global

Senate Economics Committee Enquiry into Non-Compliant Building materials and products Containing Asbestos – by Chandler and Hardie

construction volumes, ring fencing the industry with further short term protections would seem unconstructive and less opportunistic. Australia has credible international standing that could be leveraged in this instance. This could ensure a disproportionate role for Australian building products and services in a competitive and fast moving global construction supply chain. There is no escaping the power and importance of construction fully embracing the digital economy will have. This can rebalance declining compliance mechanisms and work towards a better deal for construction customers and public confidence in the built future.

Dealing with construction compliance and impairment cannot be done in isolation from the wide changes now reshaping construction. A whole of industry perspective is needed.

Most importantly we advocate for the SME's who make up, and those who have yet to start their entry into construction's future. The Committee should use this enquiry to reappraise the shortcomings of traditional regulatory effectiveness and accept that an alternate strategy is needed. We believe the opportunities suggested in this submission provide this framework.

Yours respectfully,

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