



STRATA KNOWLEDGE

INVESTIGATING BUILDING PRODUCT SELECTION AND INFORMATION TRANSPARENCY

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Investigating Building Product Selection Processes and Information Transparency

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Project summary

Over the last decade, there have been serious incidences that have called into question the conformance and compliance of building products. The impact of these events has led to numerous government inquiries, industry reports, legal cases and law reform. Combustible external cladding has undoubtedly been the product category that has received the most attention.

Building product performance is an under-researched area. There are numerous aspects of building products non-conformance and non-compliance that require investigation in order to understand the true extent and intricacies of the problem. For this project, we focus on product selection accountability. This is because irrespective of the extent of the problem, there needs to be confidence that those designing and constructing our built environment are undertaking due diligence to ensure the building products chosen and installed are compliant and conformant.

Although this topic and the results of this research may capture all building products used in the construction of any building, our research is focused on residential apartment buildings (that is, strata and community title).

The research methodology employed for this project utilised two methods of inquiry – a product information review and semi-structured interviews. The purpose of the product information review was to determine how accessible and available building product information was when undertaking a website review. The interview phase allowed us to better understand the processes implemented by building practitioners when selecting and verifying products, what guidelines they follow, what barriers exist that impact on product choice, and the extent practitioners rely on each other or other sources for information.

The results of this research study showed that:

- there are a number of professionals involved in the product selection process – both directly and indirectly. With the rise in design and construct contract arrangements in apartment builds, it is common practice for builders, design managers and project managers to work in conjunction with architects and specifiers in this process.
- although having distinct and different roles, certifiers / building surveyors and manufacturers / suppliers are heavily relied on in guiding architects and specifiers in the product selection process.
- architects and specifiers are more likely to choose products: that they have used previously, are from well-known manufacturer brands, where manufacturers provide technical support from knowledgeable representatives, and where detailed product information is provided in an open and transparent manner.
- building a trusted relationship with the manufacturer / suppliers was a key factor for architects and specifiers when selecting products.
- when reviewing manufacturer and supplier websites, we found that only a relatively small number of manufacturers provided both in-depth technical information about its products and provided it in a manner that was easily accessible and readable. Detail and clarity were lacking on most websites reviewed.

Given the government and industry focus on this topic, manufacturers and suppliers of building products should consider the discussion points and recommendations made in this research report.

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1. Introduction

Over the last decade, there have been a number of serious events worldwide that have called into question the conformance and compliance of building products. The impacts of these events have led to numerous government inquiries, industry reports, legal cases and law reform. In Australia, combustible external cladding has undoubtedly been the product category receiving the most attention although, commentary regarding other problematic products have surfaced.

Building product performance is an under-researched area. There are numerous aspects of building products non-conformance and non-compliance that require investigation in order to understand the true extent and intricacies of the problem. Previous research undertaken by us has highlighted problems associated with building product information and data transmission. Therefore, we question the extent product information is conveyed (transparency) and the processes implemented by various responsible building practitioners to verify whether the building products selected conform and comply. It is our position that, in the first instance, research is necessary to better understand these processes.

As is the case too often, there is a range of definitions relating to non-complying and non-conforming building products. Some references provide an all-inclusive definition combining non-conforming and non-compliance, others segregate terms. Highlighted below are a few definitions by source.

1. Economics References Committee, Australian Senate, *Non-conforming building products: the need for a coherent and robust regulatory regime* (Final report)

Non-conforming building products are 'products and materials that claim to be something they are not; do not meet required standards for their intended use; or are marketed or supplied with the intent to deceive those who use them'.

Non-compliant building products are products that are 'used in situations where they do not comply with the requirements of the National Construction Code (NCC). A building product can be both non-conforming and non-compliant'.¹

2. *Queensland Building and Construction Commission Act 1991* (Qld)

A building product is a *non-conforming building product* for an intended use if – the association of the product is not or will not be safe or does not or will not comply with the relevant regulatory provisions or the product does not perform, or is not capable of performing, for the use to the standard it is represented to perform by or for a person in the chain of responsibility for the product.²

3. *Building and Construction Legislation Amendment Bill 2022* (NSW)

A building product is a *non-conforming building product* if the product does not comply with an applicable requirement of the NCC, or a relevant regulatory provision or an instrument made under a relevant regulatory provision, or a person in the chain of responsibility for the product makes an incorrect representation, whether intentionally or not, about a quality, feature or capability of the product, the performance of the product in relation to a particular standard, or the product's compliance with the NCC or another legal requirement.

¹ Economics References Committee, Australian Senate, *Non-conforming building products: the need for a coherent and robust regulatory regime* (Final Report) 3.

² *Building and Construction Commission Act 1991* (Qld) s 74AB.

An intended use of a building product in a building is a *non-compliant use* if the use does not comply with an applicable requirement of the NCC, a relevant regulatory provision or an instrument made under a relevant regulatory provision, or the use is otherwise unsuitable.³

4. Russell Kenley, '*Reforms to achieve performing building products: guidance for managing compliance and conformance*' (Unpublished research report, June 2019)

Performing building product: A building product, material or substitution that, at installation, meets the performance requirements of the NCC.

Non-performing building product: A building product, material or substitution that, at installation, fails to meet the performance requirements of the NCC.

Compliant building product: A selected building product or material that was designed to meet with the requirements of the NCC, other laws, or required Australian or relevant international standards.

Non-compliant building product: A building product or material that is inappropriately selected, and which was not designed to comply with the requirements of the NCC, other laws, or required Australian or relevant international standards.

Conforming building product: A building product, material or substitution that, at installation, meets the performance of a selected compliant building product.

Non-conforming building product: A building product or material that, at installation, fails to meet the performance of a selected compliant building product.

Non-conforming building product installation: A compliant building product or material that is inappropriately installed such that the result fails to comply with the requirements of the NCC, other laws, or required Australian or relevant international standards.⁴

For the purpose of this report, the authors generally use the terms non-complying and non-conforming building products as outlined in the Senate inquiry.

Although this topic and the results of this research may capture all building products used in the construction of any building, our research is more focused on residential apartment buildings (that is, strata and community title). This restriction has been made due to the expertise of the researchers and the significant safety risks that non-compliant and non-conforming building products can pose in a complex residential setting like apartment towers.

This report is divided into five parts. Part one provides an overview of the relevant academic and grey literature relating to building product non-conformance and non-compliance. Part two outlines the study's methodological approach including the methods used (product reviews and semi-structured interviews). Part three provides the results and findings of the products review and interviews. Part four discusses these results and provides concluding remarks. The final part of the paper highlights the study's limitations and offers some direction for future research-based on the results and findings of the study.

³ *Building and Construction Legislation Amendment Bill 2022* (NSW) s 7A.

⁴ Russell Kenley, '*Reforms to achieve performing building products: guidance for managing compliance and conformance*' (Unpublished Research Report, June 2019) Page ii.

2. Literature review

Most research, particularly relating to building practices, is dedicated to investigating a problem by: asking the right questions to reveal the prevalence of the problem, perhaps identifying how the problem evolved, and at times formulating solutions to overcome the problem. For those of us working in the area of building failures, it is always the hope that our research can be used to inform policy and law reform, and make organisations and industries more aware of issues in order to advance change. Encouragingly, a shift has started to occur in Australia over the last several years whereby governments and other regulatory bodies have recommended and implemented measures to curtail problems relating to non-conforming and non-complying building products. Of course, measures that alleviate safety risks for consumers should always be a priority for government and industry.

From a researcher's perspective, understanding the extensiveness of the problem and the sources or contributing causes of the problem is an important first step in correctly identifying the areas that pose the greatest risk. It is undeniable, given the number of reports, taskforces, and processes employed by governments that non-conforming external cladding (specifically aluminium composite panels and expanded polystyrene) has been a product category that has fuelled concerns about the nature of non-conforming and non-complying building products more generally in Australia. It is not unreasonable to argue, given the extensive use of combustible cladding, that other non-conforming building products are being used.

2.1 Does Australia have a problem with non-conforming and non-complying building products?

Putting combustible cladding aside, what do we know about the performance of building products in Australia? Unfortunately, from an evidentiary perspective, it does not appear that much is known about the prevalence of non-conforming and non-complying building products in Australia. Gad notes that there are over 10,000 building product categories and estimates that 90% don't have a problem.⁵ However, it is difficult to substantiate this claim as no reference or study results are provided in the paper that references these numbers.

In 2013, a research report was published by the Australian Industry Group (AIG),⁶ an organisation, that according to its website, is a peak national employer organisation representing various industry sectors.⁷ As outlined in the report, the motivation to conduct the research was a reaction to anecdotal business and media reports about the use of non-conforming building products.⁸ The AIG conducted an online survey, undertook interviews and group discussions with 222 participants and an additional 240 people participating in the interviews and discussions.⁹ The results of the survey were reported based on product type affiliation segments (being steel, electrical, aluminium, glass, and other). The majority of the survey respondents were manufacturers and fabricators. It is important to note the respondents' backgrounds and the number of participants when interpreting the results presented.

⁵ Emad Gad, Lam Pham, Jessey Lee and Anita Amirsardari, 'Product performance - a review of construction product conformity assessment' (2021) 22:2 *Australian Journal of Structural Engineering*, 140.

⁶ Australian Industry Group, 'The quest for a level playing field: The non-conforming building products dilemma' (Research Report, November 2013).

⁷ See: <https://www.aigroup.com.au/about-ai-group/>

⁸ Australian Industry Group (n 2) 6.

⁹ Ibid 17.

According to the report, 41% of all survey respondents aligned with the steel products industry, 14% aligned with electrical products, 13% aligned with aluminium products, 11% aligned with glass products and the final category was referenced as 'other products' and accounted for 17% of respondents. When extracting the percentages reported and presenting them in raw numbers, there were 91 participants from the steel industry, 32 from electrical, 28 from aluminium, 24 from glass, and 37 from other. The main results of the survey, as reported, were that "92% of the survey respondents reported non-conforming products in their market sector...that nearly half of respondents indicated market penetration by non-conforming products between 11% and 50%, 45% of respondents reported adverse impacts on revenue, margins and employment numbers, 43% had not lodged a complaint when encountering non-conforming building products."¹⁰ A number of findings were highlighted in the report including, inter alia, that "there is a significant non-conforming product penetration in the building and construction sector."¹¹ The findings of this report have been used, including by the Senate, Economic References Committee¹² as reliable evidence to substantiate the existence of a major problem. A critique by Professor Russell Kenley of Swinburne University of Technology questions the reliability of the AIG report.

In 2019, Kenley conducted a research project aimed at "finding evidence to clarify the extent of incidences of non-conforming building products in Australia".¹³ Kenley's unpublished paper is rather scathing about the continual insistence from sources that there is empirical evidence to substantiate the claim that there is a major problem in Australia. Using a research method known as root cause analysis, Kenley found that "all emotive media reporting can be traced to a single source: the 2013 AIG research report."¹⁴ Kenley then evaluated the research as reported based on a working assumption that empirical evidence is demonstrated in the report. However, Kenley highlights a number of inconsistencies in the research and design flaws outlined in the survey. Rightly, Kenley questions the size and representativeness of the survey sample and in turn the reliability and generalisability of the results. The main conclusion drawn from the Kenley paper is that the AIG report "does not meet the basic requirements for research validity and reliability."¹⁵ For Kenley, it is recommended that a nation-wide reporting database be established for non-performing building products to ensure that policy interventions are based on reliable data.¹⁶

As stated from the outset, this research is not focused on, nor does it make claims about the extent to which building products used in the Australian market are conforming and compliant. It is apparent, through the undertaking of an extensive literature review, and as informed by Kenley's paper, that limited empirical evidence exists in Australia to reliably argue that there is a widespread problem with non-conforming and non-complying building products. This is not to say that a problem doesn't exist or that we should simply ignore the observations of industry members and anecdotal accounts. The issue, in terms of identifying the extent of the problem, is that data is lacking (there is no database that showcases building product failures) and there are no reliable or replicated studies to confirm the proposition that a major problem exists.

¹⁰ Ibid 17.

¹¹ Ibid 6.

¹² Economics References Committee (n 1) 6.

¹³ Russell Kenley (n 4) 1.

¹⁴ Ibid 1.

¹⁵ Ibid 4.

¹⁶ Ibid 38.

2.2 Does the extent of the ‘apparent problem’ really matter?

Putting the lack of empirical evidence issue aside, Australian governments and regulatory bodies, to differing degrees, have been motivated to implement policy and regulatory reforms aimed at lowering risks associated with potentially non-conforming and non-complying building products. Of course, this focus on reform has been, undoubtedly, a reaction to a number of serious fire events in apartment buildings, notably the Lacrosse building fire in Docklands, Melbourne (2014) and the Grenfell Tower fire in London (2017), where a particular building product, commonly referred to as combustible cladding has been identified as one of the main causes for the significant spread of the fires.¹⁷

As a reaction to these significant fires and industry concerns about non-conforming building products, a Senate inquiry commenced which delivered three interim reports and a final report and, the Building Ministers’ Forum commissioned an independent report on compliance and enforcement issues in the building and construction sector.

The Senate inquiry into non-conforming building products

In June 2015, the Senate referred the issue of non-conforming building products to the Economic References Committee. Although there were a number of time delays, eventually an inquiry into non-conforming building products in Australia commenced in late 2016.¹⁸ According to the committee’s report, the inquiry was formed “following a number of industry-led forums that highlighted the growing body of evidence of the use of non-conforming building materials in the Australian construction industry.”¹⁹

The committee received 164 submissions from various industry groups, government departments and agencies, individuals working in the sectors, and consumers. In addition, 10 public hearings were held.

Ultimately, in 2018, 13 recommendations were tabled including but not limited to:

- the national adoption of chain of responsibility legislation (similar to Queensland);
- the Building Ministers’ Forum develop improved consultative mechanisms with industry stakeholders;
- the development of a mechanism to report non-conforming building products;
- the Building Ministers’ Forum expedite a mandatory third-party certification scheme for high-risk building products and national register for these products;
- a requirement that high-risk imported products be tested by a National Association of Testing Authorities (NATA) accredited authority prior to importation;
- an examination of international approaches for testing high-risk products prior to importation;
- development of a national database of conforming and non-conforming products;
- the imposition of a penalties regime for non-compliance with the NCC;
- that consideration is given to mandatory recall insurance for high-risk building products.

¹⁷ Economic References Committee (n 1) x.

¹⁸ Ibid 1.

¹⁹ Ibid ix.

During the period in which the inquiry was being undertaken, the Building Confidence Report by Shergold and Weir was written and published.²⁰ This report examined broad compliance and enforcement issues within the building and construction sector. Although the authors of the report made a number of recommendations, two specific recommendations are relevant for the purposes of this report. The first recommendation (referred to as recommendation 6) is related to effective regulatory powers, specifically the need for legislative powers that allowed for the seizure of documents and materials for testing, and supply-chain regulation that included product recall and prohibition powers for high-risk building products.²¹ The second relevant recommendation (recommendation 21) is titled building product safety. This recommendation is more instructive, requesting that the Building Ministers agree on a united position about the establishment of a compulsory product certification system for high-risk products.²² The authors made some additional comments in the report that the implementation of this recommendation has commenced.²³

2.3 What actions have been taken to ensure product conformity and compliance?

In 2021, the Australian Building Codes Board (ABCB), published its Building Product Safety: National Building Product Assurance Framework, as an initial response to recommendation 21 (establishment of a compulsory product certification system for high-risk products) in the Building Confidence Report. Following an analysis of this recommendation, the ABCB advised the Building Ministers' Forum that the perimeters of the Building Confidence Report recommendation may not adequately address the compliance issues outlined and as a result the response was extended to consider a more holistic package of measures.²⁴

Five proposed deliverables are outlined in the framework aimed at targeting the failures identified in the Building Confidence Report relating to the building product control system.²⁵

Table 1 provides a summarised version of the proposed deliverables against the identified issues.

Table 1: Summary of National Building Product Assurance Framework deliverables.

Element	Proposed deliverable	Issue identified
1	Strengthen (via amendment) the NCC evidence of suitability requirements.	Evidence of suitability provisions not rigorous enough, makes it difficult for building practitioners to know when evidence is suitable for any given product type or application.
2	Regulate building product information obligations for manufacturers and suppliers. <i>The objective is to have clear, accurate, current, and verified information available for all building products to inform their compliant selection and installation.</i> ²⁶	Building practitioners responsible for specification, selection, installation and certification need access to appropriate, reliable and consistent product information. Often this information is not available.

²⁰ Peter Shergold and Bronwyn Weir, 'Building Confidence: Improving the effectiveness of compliance and enforcement systems for the building and construction industry across Australia' (Report, February 2018)

²¹ Ibid 21.

²² Ibid 36.

²³ Ibid 36.

²⁴ Australian Building Codes Board, 'Building Product Safety: National Building Product Assurance Framework' (December 2021) ii.

²⁵ Ibid 8-25.

²⁶ The Framework sets out the information that is recommended. These information items have been included in this research project's product information review.

Element	Proposed deliverable	Issue identified
3	Government set standards for building product traceability and labelling.	Traceability and identification is required to ensure specified products are the ones delivered to site and origins can be traced if problem arises.
4	A national mechanism to improve surveillance, research, and information sharing.	Building products and testing standards must be monitored and reviewed. Building product failures need to be reported.
5	State and territory enforcement legislation for product supply.	Need to ensure that compliance and enforcement addresses entire product delivery chain.

According to the ABCB, the “[i]mplementation of the National Building Product Assurance Framework will improve the regulatory compliance of building products used in the building and construction sector; increasing public confidence and safety.”

At the time of writing this report, it is difficult to determine when and if the framework in its entirety will be actioned.

Legislative reforms

It is evident that Queensland and New South Wales (NSW) have led the charge in terms of legal reform on this issue of strengthening building product safety. Reflecting on the National Building Product Assurance Framework, Element 2 (regulating building product information obligations) and Element 5 (enforcement legislation for product supply) have either been actively implemented (Queensland) or nearing implementation (NSW).

After the Grenfell Tower fire, Queensland in particular was swift in passing legislation placing a legal duty on persons in the product supply chain. In summary, the *Building and Construction Commission Act 1991* (Qld), places legal responsibility on all persons if they design, manufacture, import or supply a building product, if they install a product or if they are an architect or designer specifying the product and they know (or ought to know) the product will be associated with a building.²⁷ The primary duty is that each of these people must ensure that the building products used are not a non-conforming building product for an intended use.²⁸

In addition, this legislation requires those in the chain of responsibility to provide product information to specified end-users.²⁹ The information required includes:

- intended use of product including particular conditions (where relevant);
- instructions about how the product is associated with the building to ensure it is not a non-conforming building product;
- instructions about how to use the product to ensure it is not a non-conforming product.³⁰

NSW followed Queensland’s lead and enacted the *Building Product (Safety) Act 2017* (BPS Act) that allowed for certain products to be banned and for penalties to be imposed on those using or not removing banned products from buildings. The BPS Act was followed by the *Design and Building Practitioners Act 2017* (NSW) (DBP Act) that imposes a duty to exercise reasonable care to avoid economic loss caused by construction work.³¹ The DBP Act applies to both residential and commercial with a few exceptions. The Act extends to the

²⁷ *Building and Construction Commission Act 1991* (Qld) s 74AE.

²⁸ *Ibid* s 74AF.

²⁹ *Ibid* s 74AG.

³⁰ *Ibid* 74 AG(7).

³¹ *Design and Building Practitioners Act 2017* (NSW) s.37.

manufacture and supply of building products.³² The duty runs for 10 years from the completion of construction work and applies retrospectively to cover work done since 10 June 2010.³³ The Act can apply to any “person” engaged in construction work, including employees, directors and agents of a company that entered a design and/or construction contract, even if they did not themselves enter the construction contract or were mere employees.³⁴ The duty however cannot be delegated.³⁵

The NSW Government is currently seeking consultation on a draft bill aimed at improving the supply and use of safe building products.³⁶ The *Building and Construction Legislation Amendment Bill 2022* (NSW), inter alia, proposes to impose duties on persons forming part of the building product supply chain (including designers, manufacturers, importers and suppliers, specifiers, architects, engineers, installers).³⁷ Similar to the Queensland legislation, this bill proposes that persons in the supply chain must provide building product information to each person in the supply chain. Such information will include:

- the suitability of the building product for its intended use;
- how the building product meets the relevant Australian (or other internationally recognised) Standards for the intended use;
- any particular circumstances, conditions or restrictions where the building product may be safely used such as only internal areas or not above certain heights;
- instructions to explain how the building product is to be installed;
- instructions on how the building product must be used to remain compliant with the NCC.³⁸

New Zealand has also implemented similar reforms in recent years although the requirements relating to information disclosure appear more onerous than the Queensland legislation and the NSW proposed reforms. The *Building (Building Product Information Requirements) Regulations 2022* (NZ) requires each responsible person (manufacturer, importer, supplier) to provide prescribed building product information on an internet site and the information must be made available and free of charge without pre-conditions. The internet site address must be disclosed on each building product, on the product packaging, signed next to the product that is being displayed, or in any way that signals to the public a clear link between the internet website and the building product.³⁹ Details on the product information that must be provided is set out in schedule annexed to the regulation and includes:

- a description of the building product (including name and intended use);
- a product identifier;
- prescribed information about the manufacturer or importer (legal and trading name, address for service, email, internet site);
- a statement specifying: the clauses in the building code that are relevant, how the product is expected to contribute to compliance;
- other standards or technical documents that describe the performance of the product;

³² Ibid, s.4.

³³ Ibid, cl 5 sch 1.

³⁴ Ibid, s 36.

³⁵ Ibid, s 40.

³⁶ See: <https://www.fairtrading.nsw.gov.au/trades-and-businesses/construction-and-trade-essentials/building-products#:~:text=The%20NSW%20government%20has%20the%20authority%20to%20prevent,products%20which%20pose%20a%20safety%20risk%20in%20buildings.>

³⁷ *Building and Construction Legislation Amendment Bill 2022* [NSW] s 8E.

³⁸ Ibid s 8F.

³⁹ *Building (Building Product Information Requirements) Regulations 2022* (NZ) R 12.

- the physical properties of the product;
- how the product is intended to be used including limitations;
- any design requirements that support the appropriate use of the product in building work;
- any installation requirements;
- any maintenance requirements; and
- the statement that the product is not banned or under a warning or a description of the warning or ban.⁴⁰

2.4 What factors determine building product selection?

Given the potential risks that might arise if a non-conforming or non-complying product is specified and installed in a building, it is vital that the processes around product selection is well understood. Understanding the processes commonly employed by specifiers enables better risk management strategies to be employed by organisations, industries and governments.

It is evident that there is a paucity of research that has examined the processes undertaken by architects, designers and others specifying building products. This is particularly evident when evaluating this topic in Australia. Scholars who have attempted to uncover these processes have limited their study scope to the United Kingdom or Europe. Although not in the Australian context, it is helpful to highlight these works in order to assess the extent to which the results of this study align with the processes identified in other jurisdictions.

In summary, studies have found that architects are generally conservative in their approach to product selection and use a variety of techniques when selecting, including:

- “short cuts’ based on their own experience in order to save time”;
- preferencing products previously used;
- drawing from personal collections of trade literature; and
- relying on guidance from colleagues, particularly experienced architects.⁴¹

Generally, specifiers have used prescriptive methods to select products and often stick to brand names. Relying on known manufacturers and products appears to provide a level of comfort to specifiers when managing risk and liability and minimises the time required to investigate new manufacturers and product. Project time demands appear to limit a specifiers ability to investigate and incorporate new or unknown products into a design.⁴² There is a perception that these time demands correlate with a decline in architect and designer professional fees and unrealistic expectations held by clients.⁴³

In instances where a specifier is required to use a new product, observational research has reported that there is a higher reliance on technical support from the manufacturer if guidance from colleagues or trade literature does not provide sufficient information. In one study, the quality of the product information provided, and the knowledge of the manufacturer’s technical representative were key factors in selecting products. Technical representatives who couldn’t answer questions about the product, provided poor quality

⁴⁰ Ibid sch 1 and 2.

⁴¹ Margaret Mackinder, ‘The selection and specification of building materials and components’ (Research Paper 17, Institute of Advanced Architectural Studies, University of York, 1980).

⁴² Stephen Emmitt, ‘Observing the act of specification’ (2001) 22 *Design Studies*, 397.

⁴³ Stephen Emmitt, ‘Selection and Specification of Building Products: Implications for Design Managers’ (2006) 2:3 *Architectural Engineering and Design Management*, 176.

information, or provided information on a specified condition (e.g., if a technical representative attended the specifier's office), were quickly dismissed by the specifier.⁴⁴

In interviews conducted by Emmitt, specifiers explained that they had to trust the information provided by manufacturers given the limited time they usually had to investigate products more thoroughly.⁴⁵ There was recognition by specifiers that manufacturers knew more about their own products and were best placed to provide advice, technical detail and written specifications.

Up until recently, little attention has been paid to the type, quality and depth of information that should be provided by, and to, the people in the building product supply chain and product end-users. As stated by Gad, "[i]nadequate information can lead to unintentional or intentional mis-use of the product."⁴⁶ The combustible cladding crisis is a good example of this.

As noted above, there is now more attention, including regulatory attention, being paid to the inclusion and type of product information that needs to be provided and to whom. Although it is difficult to determine why some information points have been included and others excluded, it is evident that change is afoot. As highlighted by Gad, practitioners have often relied on product information supplied by manufacturers or suppliers that tend to emphasize positive product attributes while neglecting negative attributes.⁴⁷ It is assumed that a more prescriptive regulatory environment will flush out all product attributes enabling specifiers to make more informed choices. However, as pointed out by Gad, there remains no independent source of information,⁴⁸ and therefore specifiers are dependent on the information provided by manufacturers and suppliers. It is up to the specifier to scrutinise the information provided prior to making a product selection.

2.5 What is this research project about?

For the purpose of this research project, the extent of the problem is not really the central concern. To accurately determine the extensiveness of the problem would take considerable time, money, and expertise especially given the large number of building products currently estimated to be in the Australian market.⁴⁹ For this project, we focus on product selection process and information accessibility. This is because irrespective of the extent of the problem, there needs to be confidence that those designing and constructing our built environment are undertaking due diligence to ensure the building products chosen and installed are compliant and conformant. Product selection processes and information accessibility and transparency are the core concepts relevant to this research. This research links to Element 2 in the National Building Product Assurance Framework.

The overarching research questions are:

1. What information is required (by those responsible for the specification of building products) to ensure that building products are legally compliant and are fit for their intended purpose (conformity)?
2. To what extent is this information readily available to industry professionals to make this determination?
3. What are the barriers that prevent building product information transparency?

⁴⁴ Stephen Emmitt (n 32).

⁴⁵ Stephen Emmitt (n 33).

⁴⁶ Emad Gad (n 1) 142.

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ Ibid.

At the end of the research project, it is hoped that;

- we have a better understanding of the processes undertaken to ensure the products selected on residential buildings are fit for their intended purpose, compliant and safe;
- gaps are identified that frustrate the due diligence process;
- we have baseline data that can be utilised in the future to showcase change especially in terms of product selection processes and the type and quality of product information that is provided;
- this research inspires more research to be conducted on the broader topic of building product performance.

3. Methods of Inquiry

This research methodology employed for this project utilised two methods of inquiry – a product information review and semi-structured interviews.⁵⁰ An information and empirically based approach was undertaken in order to capture the breadth and depth of all aspects impacting information transparency in the building product selection process.

Listed below are the research activities and the methods that have been employed.

3.1 Product information review

The purpose of the product information review was to determine how accessible and available building product information is when undertaking a desktop audit. The audit was limited to the documents and information provided on manufacturers and suppliers websites. This approach was chosen, as it is the most direct method for all stakeholders involved in building production and ownership to gain access to building product information. Although it is important to note that some manufacturers and suppliers provided an alternative pathway (login to specific site information or direct contact) to request or access building product information, project constraints did not allow the research team to investigate the extent of this requested information or its quality. However, these pathways were noted in the analysis as information accessibility limitations.

The aim of this review was twofold. Firstly, the analysis provided a snapshot of building product information transparency. The type, quality, accessibility and readability of the information were assessed. Secondly, the review enabled baseline data to be collected at a particular point in time (December 2022), which can become a vital evaluation tool as governments implement reforms in this area into the future. That is, the impacts (including effectiveness) of any reforms can be measured against the baseline data.

A product information matrix was created by cross-referencing the product information requirements detailed in two key documents (Building product safety: National Building Product Assurance Framework and ABCB – Product Technical Statement template) and three regulatory documents (*Building and Construction Commission Act 1991* (Qld), *Building and Construction Legislation Amendment Bill 2022* (NSW), *Building (Building Product Information Requirements) Regulations 2022* (NZ)). The New Zealand regulation was included as an additional reference point as recent reforms have been undertaken in relation to building products. The product information requirements outlined in these documents and regulations formed the initial product information matrix. Additional product information categories were included after a sample of products was reviewed. The research team determined that vital information points needed to be included into the matrix. Tables 2 and 3, outline the product information included in the matrix and the sources of the information points.

Six building products categories were chosen for the review including glass (balustrades), plasterboard (fire rated), steel (drainage grates), electrical (insulated electrical cable), plumbing (PVC pipe), and aluminium (cladding panel). Three manufactured products of like material type were randomly chosen from each category for the review. Therefore, 18 products were included in the matrix for analysis. Using manufacturer and supplier websites, the research team extracted all information relating to the identified product under review and made comprehensive notes against each line item in the product information matrix. The results of this analysis are presented in Chapter 4.

⁵⁰ Note: initially it was proposed to undertake a review of guidelines / other documents that assist specifiers in due diligence investigations however, the authors of this report were unable to locate any such documents.

Table 2: Cross-referenced building product information matrix

Product information included in matrix	Information requirements				
	Building product safety: National Building Product Assurance Framework	Australian Building Codes Board – Product Technical Statement template	Building and Construction Commission Act 1991 (Qld) (S. 74AG)	Building and Construction Legislation Amendment Bill 2022 (NSW)	Building (Building Product Information Requirements) Regulations 2022 (NZ)
Product name / brand	✓	✓			✓
Product material type	✓	✓			✓
Manufacturer	✓	✓			(including legal & trading names & address for service)
Supplier/s	✓	✓			(including legal & trading names & address for service)
Reference No.	✓	✓			✓
Model / Variant No.	✓				
Origin of product					✓
Product Description	✓	✓			
Application & intended use	✓	✓	✓	✓	✓
Declaration of performance (NCC)	✓	✓			(NZ equivalent)
Basis of declaration	✓	✓			✓
Testing / certificate		✓			
Limitations of use	✓	✓		✓	✓
Conditions of use	✓	✓		✓	✓
Instructions for installation & maintenance	✓	✓	✓	✓	✓
Warranties	✓			✓	
Support	✓	✓			

Table 3: Additional product information categories determined by research team

Date of testing / verification	Description of test / verification methodology	Issuer of certificate/ test result
Name, date & signature on test report / certificates	Level of difficulty obtaining information	Level of information clarity (readability)
Industry accreditation	Training offered by manufacturer or supplier	Existence of Environmental Performance Declaration (EPD)

Although many of the information categories outlined in the matrix are self-explanatory, it is important to provide further detail on the specifics of the type of information included in the matrix for the following categories:

- Declaration of performance (NCC) - a statement regarding product performance including NCC performance requirements or referenced standard/s.
- Basis of declaration - basis on which declaration was made including details of evidence that support compliance (evidence of suitability pathway - test reports, technical opinions or verification methodology (if applicable)).
- Application and intended use - a statement of the intended use for the product including how and where the material is to be used within a building.
- Limitations of use - details of material limitations relevant to the compliance claims (e.g., building classification, type of construction, structural loads).
- Conditions of use - details of any conditions on the use of the product relevant to the compliance claims (e.g., expiry provisions).
- Existence of Environmental Protection Declaration (EPD) - document that communicates environmental impact.

3.2 Interviews

Nine semi-structured interviews were conducted in this phase of the project. Interviewees had varying experiences with building product selection and specification. Table 4 provides information about the role currently held by each interviewee and their background, the state they are registered and work, and an identifier number. The identifier number is used in the interview findings section to attribute specific responses to each interviewee. The purpose of the interview phase was to better understand the processes implemented by building practitioners when selecting and verifying products, what guidelines they followed (if any), what barriers existed that impacted on product choice, and to determine the extent practitioners relied on each other or other sources for information.

Each interview participant was provided with an information sheet explaining the research project, a participation consent form, and an interview questions guide. All interviews were approximately 30 minutes and conducted either via zoom or face to face. The interview recordings were professionally transcribed in order to facilitate analysis.

Table 4: Interviewees information

Identifier	Role / Background	State registered / working
1	Architect	Qld
2	Architect	Qld and NSW
3	Senior Design Manager – National Builder (Architect)	Vic
4	Development Manager – National Developer (Architect)	Qld
5	Consultant / Project Manager (Engineer)	Vic
6	Consultant (Building safety systems)	National
7	Building Designer	Vic
8	Consultant (Construction Management)	NSW
9	Consultant (Fire safety systems)	Vic

Due to the variations in interviewee roles, questions were adapted during the interview depending on the experience and role of the participant. The following provides a general guide of the questions asked:

1. Describe your current role?
2. What is your role in selecting building products for a new (strata) build?
 - a. Probe: what is your legal responsibility?
3. To what extent, do you collaborate with other building or development practitioners in selecting products? Explain involvement.
4. What process do you employ in selecting products?
 - a. Probe – existing v new products
 - b. Probe – how do you become aware of new products?
5. Are there specific guidelines provided to you (to follow) that assist in product selection and verification?
6. What information do you require about the product in order to select it for a job?
7. What are the barriers confronting you in your selection?
8. What deters you in selecting a product that may be recommended or requested by a client (including builder or developer)?
9. What would assist you in verifying that products are compliant and fit for purpose?
10. Are you aware of manufacturers / suppliers that are unable to provide evidence of their claims?
11. To what extent are you aware of products being substituted after you have selected a product?
 - a. Probe (how often, evidence, type?)
12. Do building surveyors / certifiers make contact with you about product selection and verification methods employed? Do they ensure products are not substituted?

4. Results and findings

This section of the report provides the results of the product information review and interview findings.

4.1 Product information review results

The results of the product information review provides a snapshot of the level of information currently available online, via manufacturer or supplier websites, for 18 specific products aligned to six product categories. The sample is not representative but offers some insights into the type, level and quality of product information that is available on product websites. This is particularly important in an environment where product selection might be time sensitive and specifiers are relying on easily accessible information. Gaining access to product attributes efficiently and in a way that allows for easy comprehension will arguably lead to better product selection and outcomes.

As stated in the methodology section, the purpose of the review was to benchmark building products that were randomly selected against the information requirements outlined in the Building product safety: National Building Product Assurance Framework, Australian Building Codes Board – Product Technical Statement template, *Building and Construction Commission Act 1991* (Qld), *Building and Construction Legislation Amendment Bill 2022* (NSW), and the *Building (Building Product Information Requirements) Regulations 2022* (NZ). The researchers added seven further information points that either aligned with factors identified in the literature review or were considered points requiring elaboration (e.g., the issuer/s of test reports or certificates).

Overall, the results of the analysis show variability in terms of information transparency across the building products and categories chosen. Table 5, cross references the information requirements against each product category. For ease of reference, six information topic areas are outlined for analysis:

1. *Manufacturer / supplier information*

This topic area provides source information relating to the manufacturer and / or suppliers. Unsurprisingly, product name and material type (product category) were clearly detailed on all websites. Manufacturer websites more clearly articulated supplier chains (if relevant) and ownership nationality than product suppliers. Eight websites made no reference to where the products were made or the national identity of the manufacturer or supplier.

2. *Product description, application and use*

This topic area provides information about the product, its application and intended use. Although generally all products outlined these requirements (except electrical), specificity was lacking, and application and use was broad or focused on ‘where’ the material is to be used. Examples included: ‘residential and commercial’, ‘any façade’ or ‘high-rise or special buildings’, construction types (A, B or C) or ‘wall and ceiling lining’.

3. *Product compliance*

This topic area includes declarations of National Construction Code (NCC) performance and / or referenced standards, the basis of the declaration (e.g., details of evidence that support compliance (test reports, technical opinions, or other verification methodology), and other verification information (e.g., report / opinion verifier, date of test, description of test performed, signature on report or verification document). Information relating to this topic was not generally available on manufacturer or supplier websites. Although 13

websites referenced Australian Standards (AS), rarely was any further information provided that proved compliance with the standards. Only five websites referred to the NCC requirements. Fire-rated plasterboard and aluminium cladding manufacturers overall provided the most detailed and comprehensive information. Four of the six manufacturers in this category provided signed and dated independent reports.

4. *Product limitations and conditions*

This topic area includes limitations of use (details of material limitations relevant to the compliance claims) and conditions of use (details of any conditions on the use of the product relevant to the compliance claims). Again, the information provided for this category was significantly lacking except from the fire-rated plasterboard manufacturers. Only eight of the 18 websites provided information about product limitation and only five for conditions of use. For those websites that did provide this information, the information was provided in a cursory manner, lacking detail of limitations and conditions relevant to the compliance claims.

5. *Instruction and support*

This topic area includes instructions for installation and maintenance, product warranties, support, training and industry accreditation. The fire-rated plasterboard, PVC pipe plumbing and aluminium cladding manufacturers all provided instructions for installation and maintenance with the plasterboard companies providing the most comprehensive and detailed documents. More limited instructions were provided by the other manufacturer disciplines. Support and training were generally lacking with only one fire-rated plasterboard manufacturer offering phone technical support and training. Ten manufacturers provided information on their website regarding warranties and only three provided information about industry accreditation.

6. *Environmental performance*

This topic area provides information about the Environmental Performance Declaration (a document that communicates environmental impact). Five out the 18 companies provided some type of information (e.g., emissions certificate or organization certification (e.g. Green Tag)).

In addition, an assessment was made in relation to how easy or difficult the information was to obtain when navigating through manufacturer or supplier websites and, the level of information clarity and readability.

7. *Accessibility and readability*

Across the sample, information accessibility and readability varied considerably. There were several criteria that we assessed the information presented against including:

- Website navigation – was it easy to locate product information including certificates, reports, technical data and information?
- Attributes – to what extent were only positive product attributes presented? Were the product limitations clearly outlined?
- Readability – was the information presented in a manner that various practitioners would understand? Was it presented in a discipline specific way? Were summaries provided in conjunction with data tables etc?
- Restrictions - Was information access dependent on conditions (e.g., provide contact information or call manufacturer / supplier).
- The extra mile – was it evident that the company wanted knowledge transfer? Did the website include additional materials, videos, diagrams, photos etc?

Six of the sampled websites were considered high in terms of information accessibility and readability. These websites were related to fire-rated plasterboard (two manufacturers), PVC pipe plumbing (two manufacturers), aluminium cladding (one manufacturer) and steel grates (one manufacturer). These websites were easy to navigate, with no information restrictions, and were easy for multiple disciplinarians to read. Three of the websites included additional diagrams, photographs or video evidence of material testing. Information was presented in various ways – tables, summaries, models, etc.

The twelve remaining websites either lacked technical information (low accessibility), made information access conditional by either requiring direct contact with the manufacturer (online form or phone call) or restricting information access to certifiers (low accessibility). Often navigation was difficult particularly in locating technical data and reports for specific products. The key feature of many of these sites was to promote positive product attributes and advise (without demonstrated evidence) that the product complies with Australian Standards.

Across the sample, there was a clear divide between companies that valued transparency and accessibility of information (high transparency), those that included information with limited consideration in terms of readability and information digestion (partial transparency), and those that could be considered information protectors (low transparency).

Table 5: Building product review analysis – included information points

	Product Categories						Combined product outcomes
	Glass: Balustrades	Plasterboard: Fire-rated	Steel: Drainage grates	Electrical: Insulated cables	Plumbing: PVC pipes	Aluminium: Cladding panels	
Product name / brand	3	3	3	3	3	3	18
Product material type	3	3	3	3	3	3	18
Manufacturer	0	3	2	2	3	3	13
Supplier/s	3	2	3	3 (2 – no external suppliers)	3 (2 – no external suppliers)	3 (2 – no external suppliers)	17
Reference No.	0	0	0	0	0	0	0
Model / Variant No.	1	0	2	1	1	2	7
Origin of product	0	3 (all Aus made)	2 (both Aus made)	2 (both Aus made, 1 foreign owned)	2 (both Aus made and owned)	1 (foreign)	10
Product Description	3	3	3	1	2	3	15
Application & intended use	3	3	3	1	3	3	16
Declaration of performance (NCC)	0 (1 specified AS compliance)	3 (2 specified AS compliance)	0 (2 specified AS compliance)	0 (2 specified AS compliance)	0 (3 specified AS compliance)	2 (3 specified AS compliance)	5 (13 references to AS standard)
Basis of declaration	0	3	0	0	0	2	5
Testing / certificate	1 – only relating to glass (limited information)	2 – independent assessment reports included	1	0	0	2	6
Date of testing / verification	1	2	0	0	0	2	5
Description of test / verification methodology	0	All 3 referred to assessors and that fire tests were undertaken – no specificity around test provided	0	0	0	2	5
Issuer of certificate/ test result	1 - company not individual	2	1	0	0	2	6
Name, date & signature on test report / certificates	0	2	0	0	0	2	4
Limitations of use	1 – system not tested	2	1	1	2	1	8
Conditions of use	0	3	1	0	1	0	5
Instructions for installation & maintenance	1	3 – detailed installation manuals	1	0	3	3	11
Warranties	1 x 10 years	1 x 25 years	3 x 6mths to 10 years.	1 x 1 year	1 x 1 year	3 x 20 to 25 years	10

Support	1 – YouTube video	1 – installation videos 1 – tech phone support	0	0	0	0	3
Industry Accreditation	1	0	0	2	0	0	3
Training offered by manufacturer or supplier	0	0	2 – training and installation	0	0	0	2
Existence of Environmental Performance Declaration	0	0 – 1 provided emissions certificate	1 – green tag	1	2	1	5

4.2 Interview findings

Nine professionals participated in the interview phase of this project. Six interviewees had a background in architecture or building design and three were building consultants with various backgrounds including engineering, construction management and building safety systems. The response rate for architect engagement was extremely low for this study. Time restraints appeared to be the main issue precluding participation. Participants were asked to respond to a series of questions relating to their experience with building product selection and their opinions or observations about current practices. Quotes have been extracted from the interview data to illustrate these experiences, opinions and observations. To ensure anonymity, the participants' quotes have been given a reference number that (as outlined in the methodology section) identifies their professional background or interest and the state they are located and/ or registered. Given the limited number of interviewees who are currently working in the same area, the data is unlikely to be saturated as a whole and therefore these findings don't necessarily illustrate consensus. However, the analysis revealed some shared views and perspectives that warrant consideration and discussion.

As semi-structured interviews, the participants were provided a questions guideline that aligned with the aims of the research project. However, new lines of questioning arose both during each interview and the interview phase that uncovered new areas of exploration. We have demonstrated these findings by posing a number of questions.

Who is involved in the selection and specification of building products?

Traditionally, as discussed in the literature, it was the exclusive domain of architects to specify the building products to be used in the construction of a building. As highlighted by the interviewees, there has been a significant shift in modern construction where other building professionals are now more involved in this process.

From an architecture perspective, interviewees explained that there is now a tendency to separate architects into two camps: those that undertake purely design or conceptual work; and those that undertake the documentation and specification work. In some architecture firms, there may be a segregation of these roles, or the specification work may be outsourced to a specialist, often a senior, experienced architect. One interviewee explained these roles:

I think you've got design architects and then you've got project architects - project architects taking the design and developing that and turning that into construction documents which involves the specification process as well and all the consultants that might be involved within a project. And then you've got architects from a traditional sense. What the market used to be and what some offices still are. [1]

Interviewees recognised that all architects should have an understanding of the NCC and applicable standards. However, the building consultants interviewed stated there were problems with the level of education and understanding that architects had about building products and how building products interact within a building. Although there were acknowledgements by interviewees that, given the volume of building products and systems in the market and the constraints on time and fees, architects can't be specialists in all aspects of the design role.

I do feel sorry for the architects. It use to be a role of prominence, of having power, of having prestige around it. Architects are challenged to get respect. It's not a comfortable position for them to be in. And they can't know everything. [5]

However, some interviewees were rather scathing about architects lack of knowledge, as noted in these comments:

So the big problem we've got in Australia, we've got architects that are trained on artistic impression, and literally aesthetic appeal. They are not taught on the technical aspects of putting a building together, how products interact. ...Architects simply pick products based on aesthetics – how does it look? I want to win awards. That's all they look at. They have no consideration to how those products interact with each other, how do we control moisture, condensation, air flow, fire rating – zero consideration to any of those aspects of it. [8]

As a designer and architect, it's their job to ensure whatever they're designing, they've got evidence of suitability for their design. If they don't, then they are designing a construction, which is non-compliant. Now, first thing I noticed and this is just a guess, 95% of architects and designers have never read the relevant parts of the National Construction Code. [9]

The role of the building designer was also raised in the interviews. In New South Wales and Queensland, building designers are not registered and therefore not allowed to design more complex buildings like apartments. As explained by one interviewee:

Building designers are sort of one step down, one step lower peg. They tend to work on smaller buildings. They have a lower degree of education in both design and documentation and buildings themselves. As a result, they have a slightly lower duty of care. [2]

However, in Victoria, this limitation does not exclude building designers from working on any building, including large apartment complexes. As explained by a Victorian building designer:

We do the same work. Being based in Victoria, it's slightly different to other states. In Victoria, basically, a building designer can work on any building, from class one to class nine. An architect perhaps is more about the design, and the building designer is perhaps more about the practical documentation and making sure everything works. We still have to comply at a minimum with the National Construction Code, whether you're an architect or a building designer. [7]

Although only one apartment developer participated in this research project, it is important to consider the involvement of developers in the product selection phase. This is because the developer would receive complaints directly from apartment owners about a product failure in a new build. Although this interviewee discussed lessons learned from previous projects where building products failed and caused significant damage, developers are generally reliant on other professionals when choosing non-aesthetic building products. As explained by this interviewee:

"Everything we see, we want to control, but everything we don't see, you guys [builders] can do what you want to do." So, structure, services, they could play around with that – we'd get it peer reviewed to be comfortable and they'd go out and get the best prices... We're involved to the extent that we need to know it's a compliant system [4]

Given the prevalence of design and construct contracts in apartment construction, the appointed builder is often involved in aspects of the product selection process. As explained by our builder interview:

We rely on our architects for product selection, but guided by us because we have insight as to what things cost, and their availability, because we liaise directly with our suppliers, so it's important to understand what is available. Obviously, cost is a big factor in final selection, too. So, we work closely with the architect. We don't just allow them to go crazy with the selections and materials - whether it be internal or external on the facade, because it's important that we're meeting the brief and also maintaining budget. [3]

This interviewee also explained that in some larger building firms, there are design managers that produce working drawings for tendering works and obtaining building permits. Although the architect continues to play a role in preparing design drawings for town planning purposes, there appears to be a dilution of the architect's role in the whole construction process particularly in design and construct arrangements.

Our builder interviewee explained these roles:

So, most builders, some of them title it as design managers. Others get the project manager to run the design as well. So, a lot of project managers, design managers for the builder. Look, we're a D and C builder, so design and construct. That's why we're engaging the architect to prepare our design drawings for town planning. But most of the time, we need working drawings to be able to tender the works for and get building permits. So, most builders will have someone in my role, managing the design process. Then once I've completed a design, packaged up a contract set of documents, I'll hand that over to the construction team and they'll tender the works. [3]

From a developer perspective, the inclusion of a design manager appears to be welcomed, as highlighted by our interviewee:

So, that design manager has so much knowledge, they're invaluable people, they really are. And in some ways, they're almost taking the place of the traditional architect. [4]

One interviewee discussed the deskilling that is occurring in the building and construction sector that aligns with the shift from traditional architect and builder roles to segregated management roles.

A lot of architects are not doing contract administration anymore, so you then have a project manager doing that and you lose once again that point of contact. The builders have changed as well. We don't actually have builders who build anymore. We have builders who manage contracts as well. Within these larger building companies, none of them actually build. They manage contracts. They have a construction administrator and a project manager within the building firm and they manage contracts. No one physically sits down and digests the set of documents that a builder is given to see, "We have these items. We have these over here but that needs to have this to happen and by the way, we need to allow for screws to hold all that up." So it's becoming a little bit deskilled in the process. [2]

What guidelines do product specifiers follow to ensure that building products are compliant and conforming?

Interviewees advised they were not aware of specific guidelines available to assist in the process of ensuring products selected are compliant and conforming. Across the board, interviewees suggested that experience created a mental checklist.

There isn't a checklist out there. It comes from experience. [2]

It's a little bit experience. [3]

It does come from experience, I'd say, in the majority of cases. [7]

Although the interviewees specifically engaged in product selection did not highlight the Australian Building Codes Board Evidence of Suitability Handbook, one consultant pointed out that the handbook stresses the need to ensure that basic levels of evidence are met.

One of the things that it [Product Assurance Handbook] did stress to all practitioners who are responsible for documenting products, specifying products, procuring products, that there are the basic levels of evidence that you need to look for and that, depending on the potential application - so, for instance, if the purpose of your product is fire protection, then you have to

put more emphasis on ensuring that you are satisfied that that product is what it says it is, will do what it says it's meant to do. And so in the handbook it says, "In these circumstances, you should be looking for more levels of evidence than for a product whose function is less significant." [6]

How reliant are architects and specifiers on other parties to ensure compliance and conformity?

Architect interviewees in particular discussed their reliance on various building professionals to ensure compliance and conformity:

There's always another entity involved, because we're not experts at everything, and we would never proclaim that we're going to be an expert at electrical things or structural things. That's not our discipline, so we rely heavily on our client's consultants to inform us and give us the right information as well. [1]

Certifiers / building surveyors were deemed the building professionals most heavily relied on by architects and product specifiers in terms of compliance. It was evident from the conversations regarding certifiers that their role does not entail advice on product selection. However, as one interviewee suggested, they are a bit like the umpire, they know the rules. Another interviewee highlighted that certifiers are heavily reliant on certificates of compliance. That is, documents that evidence product compliance.

The following quotes highlight this reliance and the perimeters of this role.

The architect these days, especially in very complex buildings, will rely on the certifier for advice of, "I'm doing this. Do I comply with the Building Code of Australia or the legislation?" Because what's happened is the legislation has become more and more complex as buildings have evolved, as society has evolved. A certifier won't work in products. They will work in the rules. They're a little bit like an umpire. They know the rules and they'll assist you with the rules. Then it's the architect that goes and says, "I need a wall that has a fire rating of 120/120/120." They then go to experts, which would be the product manufacturers who have tested systems and then go, "For a 120/120/120 wall." [2]

We rely heavily on our building surveyors. So, the certifying building surveyor guides us on what products can be used on which buildings. So, the rise in buildings is important because that would depict the type of construction. So, our building surveyor will guide us on that, particularly the fire rating, non-combustibility of facade materials is obviously a big item at the moment. But often we're always going back to the building surveyor to get clarification on what Australian Standards of non-combustibility the facade materials need to meet. Certifiers basically will just gather the information and make sure it's there. They're not assessing the information, right? They're just relying on the certificate says that product is compliant to a certain Australian Standard, they just need to check that. They're not assessing that it is. Someone else has done that to create that certificate. [3]

What factors are important when choosing a product?

There was consistency across the interviewees' responses regarding the factors that were important to them when selecting products. Previously used products, well-known or branded products, manufacturers offering technical support, easily accessible product information, and access to certificates of compliance were all important attributes. The following quotes highlight the importance of these factors.

You will have a palette of products that you use time and time again. It gets built, it works. If it ain't broke you're not going to try and fix it. You tend to build up a rapport with companies that not only provide you with the products, they provide you with the technical support, the information and the certification to back it up that is appropriate for the legislation. The first

thing you need is a company that is going to provide you with technical support to start off with. Support is absolutely key. Today I was working on a specification for some acoustic panelling and using a brand that I've used before. I'm writing all the text for the specs and I just pick up the phone and go, "I've got this situation. What do I do here?" "Is that the way we install it?" "Yes." "How does it come packaged? and I'm typing as they're giving me the information. [2]

[Our company has been around for a very long time], we have a very strong track record of products and the products that we've used, to an extent that we've seen materials and products in buildings for 25-plus years and we know how those products stand up. We also know how those companies stand up. We also know how those companies support us as well and support our clients 25 years down the track. [1]

We like to use products that we've used before and that we know are compliant, so you don't have to keep going back over new materials. As a builder, materials we know are compliant and we've used before. Also, we have a good understanding of how much they cost, right? So, we tender the jobs on the facade material, that's going to be at a certain price point. So, we tend not to steer away from new products. Basically, we try and keep to what we know is compliant. [3]

I'm heavily reliant on the manufacturers and the manufacturers that I've dealt with in the past. Quite often I go directly to the manufacturer. And obviously, because they want to sell their products, I find them very cooperative. And they [named manufacturer] in fact have a technical department available to designers if you've got any technical questions. [7]

It was very evident when discussing this topic with architects, that relationships played a key role in product selection. Interviewees emphasised the importance of knowledgeable manufacturer representatives and their reliance on them. Conversely, architects were more dismissive of products where the representative had limited knowledge or had moved around manufacturing companies. As one interviewee articulated, representatives who work for a manufacturer for a long period of time are considered essential, and referred to as product knowledge holders. These representatives and their associated manufacturer are held out as trusted partners because employee longevity reinforces the good reputation of the company and its culture.

This is where relationships happen and you are in a situation where quite often you ring up a product rep and go, "I've got an X, Y, Z situation. I want to achieve this. What product should I be using?" In most cases they will go, "You should use A, B, C and here's all the documents that you need for that. There's that trusted company that you've dealt with time and time again. It becomes a partnership and these are reputable companies that do all the testing, do all the R&D. You very quickly find the companies that are just there to sell an imported product, which makes me really nervous. [2]

I think it's really obvious through a relationship. You can really understand people's personalities in relationships and a lot of these architectural reps out there, they swap their roles very, very often and quickly and so it's the ones that stay in their position for a longer period of time are the ones that are the knowledge holders. Then also, that shows you the reputable company and potential culture of that company that person's involved with and so that tells you a lot straightaway. And we deal with a lot of reps that move over and so therefore they're not knowledge holders, they don't know as much as what we know in their own product because they haven't been in it long enough. And so that, for me, is fundamentally really easy to figure out by just asking a few simple questions, really, and are they just trying to be a salesperson as well. [1]

How important is information accessibility?

Interviewees discussed the importance of accessing technical information and their perceptions when manufacturers or suppliers weren't forthcoming with certificates or reports. With increased focus on liability throughout the supply chain, the ability to obtain certificates and reports quickly was seen as essential. There was a perception that companies that are not willing to be open with their product information were perhaps hiding something. This resulted in architects devaluing a product and selecting another.

That's an extremely important component, because with this chain-of-responsibility stuff, we're all putting our lives on the line and our livelihoods on the line by purely selecting things, because everyone who touches that is liable. Usually, I turn around to clients and say, "If they're [manufacturers] not willing to give you the certificate there's something wrong, or if they can't supply it in a timely manner, there is something wrong." [2]

The difficulty in navigating badly structured websites was another issue discussed. As suggested by an interviewee, it is often better to simply call the product representative in the first instance.

We need to turn to the technical information. Some companies have atrocious websites for navigating through and try and find the information. Again, I'm a very personable person, so I think the best thing to do is just pick up the phone first, call the rep, form that relationship first and then go to the website. [1]

The presentation of product information was also discussed in the interviews. The multidisciplinary nature of professionals involved in building and construction means that, at times, the language and phrasing used in product materials requires interpretation. As highlighted by one of the interviewee architects, testing is based on engineering disciplines and therefore test reports and certificates can be difficult to interpret.

You've got to think about the way that these products are being tested and the way that these standards are set up. The testing of products is really based on the engineering discipline and again we're architects, not engineers and sometimes these test results and these certificates that are provided could be a lot clearer in regards to what it's actually saying. When I get a test certificate, I might look at the Flammability Index and I'm like, 'That's great. I don't know what that is off the top of my head, I now need to get the Code out', and then I'll make a call to work out whether this is compliant. [1]

Similar sentiments were expressed in relation to architects / specifiers and builders / contractors. How information is digested based on discipline and practicality appears to have been missed.

There was that traditional system – there was a specs writer. They tended to be older architects that were semi-retired, and they had a mountain of knowledge, and they would write very big specifications. But what we found was some of the builders you'd give them the specifications and they'd just say, "Thank you, that's a great stop," and they'd never look at them. And I'd say, "Well, why don't you look at them?" And the typical answer was, "Because all they do is refer to standards. Put those tiles in in accordance with Australian Standard X, Y, Z." It was like, "Why don't you just say what you want? If you want acoustic underlay under tiles, tell us what product, how thick and what does it go onto? They were just looking for a methodology, "If you've got to write a specs, make it useful." So, I think with the D and C approach, that the value of the specs is starting to lose its importance. [4]

What impacts has the combustible cladding crisis had on product selection?

Given the concerns relating to combustible cladding, interviewees were asked whether they had witnessed changes to product selection processes. Discussions generally related to two issues – more documentation and the role of insurance / insurers. In terms of more documentation, interviewees commented that all professionals were requesting and gathering more product information and certificates.

Everyone is stepping up their game. Certifiers are asking for product certificates a lot now and it's a matter of who's collecting. Trying to put some of the onus on the builders to provide some of that certification stuff but at the same token, architects are also collecting all this paperwork as well. [2]

In relation to insurance, one consultant interviewee suggested that changes in professional indemnity (PI) insurance were the main driver for change.

I think the only thing that's affected their choices of the things they choose, is because their insurance has changed. That would be the main driver. [5]

Several interviewees provided examples of instances where compliant aluminium panels were being impacted both in terms of statutory building insurance and PI insurance. The following quote highlights the latter situation.

This happened recently on this high rise. There's an aluminium product that is specified, and then the facade engineer writing the report for waterproofing, their insurance wouldn't cover them. So, their PI insurance wouldn't cover them to approve a particular product. Well, the supplier's ringing me up, telling me the product is compliant. But then obviously the facade engineer's saying, "No, regardless of what he's telling you, as a business, our PI insurance won't cover us to write waterproofing reports for that product. So, choose another product." [3]

One architect discussed the race to create a new aluminium composite panel in the wake of the crisis.

After all this fire stuff came out, you had suddenly all these companies coming out with their aluminium composite panels saying, 'Ours comply though, ours comply'.

'No, I don't think that - do you have this test?'

'No.'

'Well, then it doesn't comply. We can't use it.' [1]

What needs to change to minimise risks associated with non-compliant or non-conforming product use?

There were varying points raised by interviewees regarding what they thought was required to minimise the risks associated with the use of non-complying or non-conforming building products. The building consultant interviewees squarely placed the need for change on the practitioners specifying building products.

So product selection generally isn't the error, it's generally not knowing how to detail that product. [8]

The real problem is the non-compliant use of products by practitioners who are either incompetent, ignorant, naïve, untrained, unskilled, looking for cost-cutting opportunities. That is your problem, and a mandatory product certification scheme isn't going to solve that problem for you. [6]

The architect interviewees highlighted that the shift toward design and construct contracts, the squeezing of building costs and architect fees, and time constraints across the board had contributed to increased risks around the use of non-compliant and non-conforming building products. As explained:

I personally feel the D&C [design and construct] model is broken... It shifted the responsibility and the power too far towards the builder. It was all set up to get things done quickly. One of the biggest problems is the industry is focused on quicker, quicker, quicker, cheaper, cheaper, cheaper. We've got to have a lot of things change unfortunately for it to improve the final outcome. We've got to have developers willing to pay what buildings actually cost because to be honest, they've been getting discounted buildings for a long, long time because builders haven't been pricing buildings properly. So we have builders going in at 0% margin with the view that they will get it on variations, on screwing subcontractors, on product substitutions. We're starting out on the back foot already and it has shown very blatantly in recent times because we're starting to see builders go bust. Because if in the current climate you're not managing to screw down prices of anything. If anything the prices are going up so the margin that you used to rely on for those variations and costs is not there. [2]

It all comes down to time and efficiency. We know that labour is the most expensive part of running a business so if you've got someone sitting there and having to go through this 3-step process just to see if a certificate is correct or not, that could take who knows how long, but if there was a simple way of doing it that was trainable and more effective, we'd save our clients a lot of money. And we keep getting the pinch on our fees as well. Every client wants to pinch that little more, little bit more, little bit more. [1]

What other points need to be considered in this discussion?

A well-known, senior building consultant interviewed for this project made several important points regarding this topic including that:

1. This is not just about cheap imported products but a systemic issue that has not been dealt with;

Immediately after the Lacrosse fire and despite the fact that we were given quite a catalogue of things to do, the preferred option was - and I'm pretty much quoting here - ban cheap Chinese imported products and our problem will go away, and we said, "That's not going to solve your problem because it's not the problem you've got." But it goes to a point. What's a simple, not even an elegant solution? Let's just ban combustible cladding and our problem goes away. And we said, "Well, today it's combustible cladding. Tomorrow it's fire doors and the day after that it's smoke detectors, and it's something else after that." You're not dealing with the systemic issues. [6]

2. A combination of issues have emerged that contribute to the problem including;

The fact that we have many unsophisticated actors working in a performance based regulatory environment that requires sophisticated actors and there is a culture in the building industry where there is opportunity to exploit the system and you've also got a race to the bottom where everyone starts repeating the same [bad] behaviour. [6]

3. We need to consider whether our testing standards are appropriate and lead to the right outcomes.

So it's [product testing] basically done in a laboratory. It's done with a certain set of parameters, which when you go to site, those parameters might change. Now, the intention is that it will be like for like, but that's not always going to be the case. Now, that doesn't mean [named laboratory] has done the wrong thing. They've tested in accordance with the standard. But the question mark from the enquiry into Grenfell is, are these test standards

appropriate? Are they giving us the right outcomes? So there's question marks at either end of the work that [named laboratory] will do that bring into question whether or not we're getting the right outcomes. [6]

5. Discussion and conclusion

The overarching aim of this research project was to examine building product selection and information transparency. In order to achieve this aim, it was essential to understand who was involved in the product selection and specification phase and the processes undertaken in selecting building products. There needs to be confidence that those designing and constructing our built environment are undertaking due diligence to ensure the building products chosen and installed are compliant and conforming. That is why this research is important, irrespective of the extent of the problem of non-conforming and non-compliant building products.

Instituting a selection process and accessing the right information is an important first step. Tracing and verifying the information should then follow. This research links to Element 2 in the National Building Product Assurance Framework, which places an onus on manufacturers and suppliers to provide evidence in support of a product's intended use.

Three main research questions underpinned this research project:

- 1 What information is required (by those responsible for selecting building products) to ensure that building products are legally compliant and are fit for their intended purpose (conformity)?
- 2 To what extent is this information readily available to industry professionals to make this determination?
- 3 What are the barriers that prevent building product information transparency?

In answering these questions, we first need to determine who is involved and ultimately responsible for product selection, then what processes they employ and what factors are considered in product selection, before discussing what information is available and the apparent gaps.

5.1 Product selectors

The interview phase of this research highlighted the various professionals that have a role to play in building product selection. Some have more of a direct role (architects, design managers, building designers), others more indirect (certifiers, developers). Of interest, was the impact that design and construct contract arrangements had on product selection responsibilities. It was evident that the traditional model whereby the architect assumes sole responsibility for design and specification has changed, particularly in the apartment or multi-residential space. Today, there is either a segregation of the architect role where those designing (the conceptual work) outsource, internally (within the firm) or externally, the product selection and specification role or, the builder, builder design manager or project manager work in conjunction with the architect guiding product selection. It was evident that builder input was common in product selection ensuring the construction budget was maintained and that product supplies were available when needed on the construction site.

There was an acknowledgement that given the complexity of apartment builds, the various levels of knowledge and understanding of the National Construction Code, standards and other relevant regulations, and the volume of products in the market that a more consultant-inclusive approach is used and warranted to ensure compliance. Architect interviewees highlighted the need to include client consultants from the design phase on. These consultants often included various engineers (fire, structural, mechanical, electrical), passive fire specialists, project managers and certifiers or building surveyors. Although acknowledging that it is not the role of the certifier / building surveyor to select products, architects and builders spoke about certifiers in terms of a compliance safeguard, seeking

advice as to whether a selected product complies, what is required in a certain situation to achieve compliance or what is the most relevant information to note on a certificate of compliance. Given the regulatory focus in a number of states around the supply chain of building products, it is likely that more compliance checks and consultation will be undertaken by those with greater responsibility and liability. Undoubtedly, each jurisdiction will need to monitor and address unregulated and unregistered professionals in the building and construction sector who may be involved in product selection and compliance.

5.2 Building product selection processes

Although the Australian Building Codes Board has produced the Evidence of Suitability Handbook, none of the interviewees involved in product selection referenced this as a guide they used. Instead, interviewees advised it was experience that guided them through the process of product selection.

Their experience created a mental checklist of factors that they considered important in product selection. Similar to many of the attributes outlined in the literature, architects and specifiers prefer building products from manufacturers and suppliers:

- they have used before,
- are well-known brands,
- where excellent technical support is provided,
- where good relationships with knowledgeable representatives exist,
- provide easily accessible, comprehensive and readable information.

Architects and specifiers tended to steer away from new building products unless the client required their use, or no other option was available and they were not easily swayed by manufacturer or supplier representatives with limited product and compliance knowledge. Manufacturers and suppliers who are not transparent in providing all the necessary product information are seen as untrustworthy.

It was apparent from the interview phase that there was a high reliance on manufacturers in the product selection process. Trust and relationship building are key attributes. Given this relationship and dependency on manufacturers, it could be argued that this stymies the due diligence process where compliance and conformity verification is lacking.

5.3 Information accessibility and transparency

One aspect of this research was to gather some baseline data in terms of the breadth (types) and depth (detail) of product information currently provided by manufacturers and suppliers. We limited our examination to information solely provided on manufacturer and supplier websites. This was an intentional limitation as it showcased the extent to which companies are willing to be open and transparent about their building products. Given the time limitation on those professionals specifying building products, the ability to access product information in a timely manner was key, particularly in instances where the specifier needed to ensure that the product was legally compliant and fit for its intended use.

As highlighted in the results and findings section of this report, the sample of products chosen was not a representative sample but a diverse sample in terms of product category. This allowed for comparisons to be made within the product categories. If the suite of information requirements was adopted by governments through legislative reform or by industry as a best practice approach, future researchers could then evaluate the effectiveness of those changes.

Although we reviewed and based the information requirements on five sources (as outlined in Chapter 3), the most comprehensive set of requirements that were incorporated into our product information matrix were those outlined in the National Building Product Assurance Framework. This framework was prepared as a first step in addressing building product safety issues under the Australian Building Codes Board Office. Therefore, we have assumed the proposed actions in the Framework will be implemented in the near future. It is our understanding that in formulating the Framework there was considerable public consultation and industry engagement. It is evident, based on the content, that a lot of time and money has been spent on producing this Framework. If governments don't require manufacturers and suppliers to implement this action, then the relevant industries should.

Our analysis of the product information review showed there were, albeit a small number, of manufacturers that were open and transparent in the breadth and depth of product information provided. These manufacturers also ensured the information presented on their websites was easy to obtain (downloadable) and to read. These companies were from the fire-rated plasterboard and aluminium cladding panels product categories.

However, the majority of our sample underperformed in terms of information transparency, accessibility and readability. Although many websites referenced Australian Standards, most did not provide any evidence to substantiate the compliance claim. Similarly, very few websites provided detailed information about the limitations of use and the conditions of use. Generally, websites were difficult to navigate, had conditions on accessibility (that is, users were required to contact the manufacturer or supplier through an online contact system or by phone), and information was limited. Little consideration had been given to the discipline or knowledge base of the professionals interacting with the website. In many instances, where technical data sheets were provided, written summaries that interpreted the data were generally not provided to assist the website user in digesting the information. Overall, the majority of sites appeared to be developed for marketing purposes with the technical information provided in a cursory way.

If product selectors do not have the time, knowledge or interest in evaluating volumes of data and information, then we are no further down the track in ensuring compliance and conformity. It is important to remember that disclosure doesn't always equate to transparency. Manufacturers and suppliers should carefully consider what information is provided and how it is provided.

As articulated in the literature review and in the interview phase of this research project, manufacturer and supplier support mechanisms were a crucial factor for architects and specifiers when selecting products. The products review analysis showed that very few companies either highlight their support programs on their websites or don't provide it. Investing in support and training mechanisms was an important step particularly for those manufacturers and suppliers engaged in the production or sale of higher risk building products.

To conclude, this research has enabled some insights to be drawn into the processes that product specifiers undertake in an effort to ensure that building products selected on residential buildings are fit for their intended purpose, compliant and safe. It is clear that there is a heavy reliance on multiple building professionals and manufacturers, in particular. Given this reliance, it is expected that manufacturers provide information in an accurate and transparent manner incorporating all information requirements including evidence of suitability, limitations and conditions of use. It is in their best interests, to provide a comprehensive product information package that assists selectors in undertaking their due diligence.

Gaps in the process were evident. Professionals relied on their experience when navigating through the product selection process and spoke of the limited guidelines available to assist in the process. The lack of accessible information via company websites stood out as a substantial gap particularly given the clear time constraints of architects and specifiers when undertaking this due diligence process. Although the level of support actually available by manufacturers was difficult to determine from reviewing company websites, it is a favoured method by architects and specifiers. Manufacturers and suppliers should consider not only the level of support provided but also how this support is conveyed.

We now have some baseline data that can be used to showcase future changes in product selection processes and the type and quality of product information that is provided. It is hoped that this research inspires more researchers to further explore the topic and building product performance more generally.

6. Study limitations and future research direction

This study is not without limitations. It was extremely difficult to obtain agreement from architects and building designers to participate in this research project, which led to a low response rate and a greater reliance on other building professionals. Therefore, it is likely the data from the interview phase is not saturated and as such the experiences and observations outlined may not accurately depict current practices.

Further, the product information review was limited given the size of the building products market. Although the purpose of this phase was to gain some insights into information transparency, this phase could be extended to incorporate a larger number of product categories and products. There may be other product manufacturers in other categories not included in this study that are open and transparent in supplying product information.

Overall, there have been limited studies undertaken both internationally and in Australia that investigate issues relating to building products including, as stated in the literature review, the extensiveness of the non-compliant and non-conforming problem. Although there are reports that detail industry accounts of problematic products, there is no itemised list of these products that is publicly available nor are there details that substantiate their non-compliance attributes. As suggested by Kenley, a nation-wide reporting database should be established for non-performing building products to ensure that policy interventions are based on reliable data. A research project that identifies and evaluates these products should be considered.

It would also be valuable to examine, trace and verify the compliance claims made by manufacturers and suppliers. Providing information is one thing, tracing the claim to a source in order to verify the claim is another.

As discussed in other research papers that we have delivered and as highlighted by one of our interviewees, the testing standards for building products need to be evaluated to ensure they are appropriate and achieve the right outcome. A project that evaluates our testing standards should be a priority.

We also recognise that ensuring building products comply and conform is only one step in the process toward building safety. If the building product is not installed in accordance with manufacturer requirements or specific standards, then the product or system fails, leading to a building defect and an increased risk to resident safety. Viewing building safety in a holistic manner is essential in order to deliver high quality and compliant buildings.

For researchers, this is an important and broad topic area that would yield important insights for law reformers and industry.