21 July 2017

Mr Mark Fitt
Committee Secretary
Senate Economics Legislation Committee
PO Box 6100
Parliament House
Canberra ACT 2600

By email - economics.sen@aph.gov.au

Dear Mr Fitt

Senate Inquiry into non-conforming building products: Implications of the use of non-compliant external cladding materials in Australia

IAG welcomes the opportunity to make an additional submission to the Senate Inquiry into non-conforming building products, specifically on the implications of the use of non-compliant external cladding materials in Australia.

As an insurer our primary role is to help customers manage their risk and mitigate against the financial losses they are covered for. At IAG our purpose is to help make the world a safer place for the customers and communities we serve. We insure over three million homes, businesses and farms and take seriously our role in rebuilding people's homes, businesses, farms and lives following misfortune or disaster.

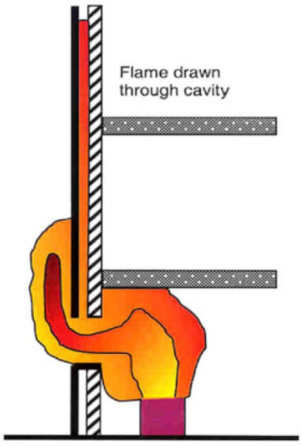
In recent years, modern construction and building design in Australia has seen an increase in the use of plastic foam cladding, particularly in high rise buildings. In our experience this cladding is highly combustible and poses a fire risk much higher than other materials available, particularly when paired with equally combustible plastic foam insulation. Additionally, these materials are often being used in a way that does not conform with the National Construction Code (NCC) and Australian Standards, this is a concern to IAG as:

- This threatens the safety of our customers, employees and the broader community;
- It increases the fire risk of buildings placing upward pressure on premium cost for consumers; and
- Non-compliance is a hidden risk. If we cannot accurately assess risk, the uncertainty results in sub optimal outcomes for customers and insurers.

Plastic foam cladding is a high fire risk

The use of plastic based foam cladding to line the outside of the building (facades), the roof and internal walls present a fire hazard in large high rise buildings. Its highly combustible nature will cause the fire to spread very quickly across the foam panels as the flame ignites the combustible core supporting heat propagation through the panels. This in turn delaminates the cladding skin, letting

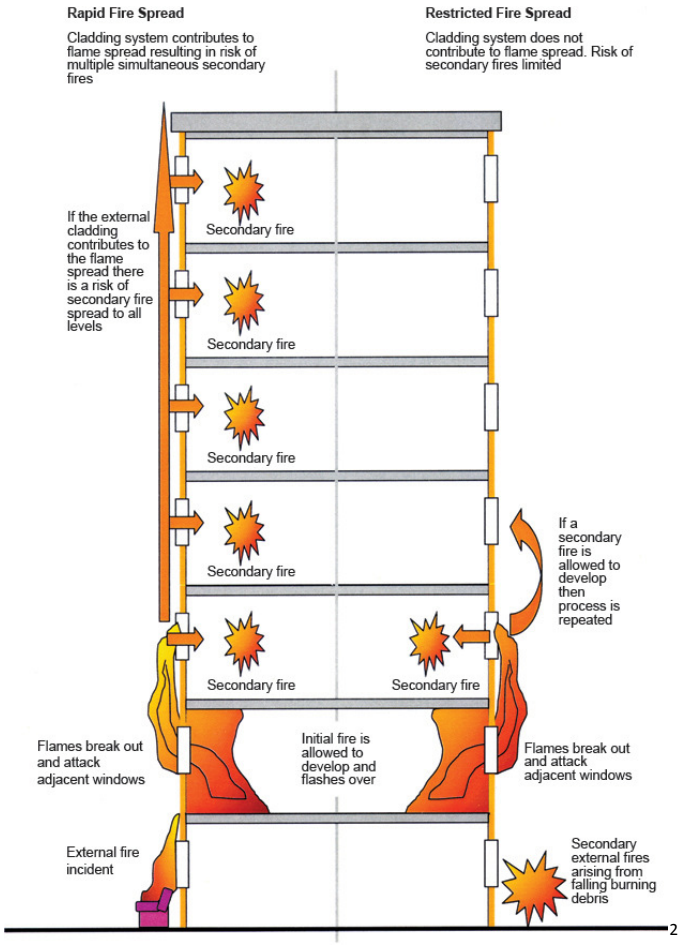
[1]oxygen into the fire area, which allows the fire to grow and spread as the combustible material by-products are released and panel cavity ignited



All it takes is a very small ignition source to ignite the foam and start this process. For example; in the Shanghai fire (case study below) the ignition spark was from a resident conducting hot works i.e. welding, grinding, cutting or use of an open flame. A similar fire in Beijing was caused by fireworks on the roof of the apartment.

A fire can then create multiple secondary fires inside the building that can spread from floor to floor. Falling burning debris (common for plastic foam panels) can also create secondary fires on the ground, which pose a major hazard to fleeing occupants and firefighters. Secondary fires can also ignite the foam panels on the other side of the building, thus causing this chain reaction to repeat itself in a secondary location.

The case studies below clearly illustrate that the use of foam plastic in construction poses a fire hazard that may cause the loss of an entire high rise building and potentially significant loss of lives.



[1] http://www.probyn-miers.com/perspective/2016/02/fire-risks-from-external-cladding-panels-perspective-from-the-uk/http://www.probyn-miers.com/perspective/2016/02/fire-risks-from-external-cladding-panels-perspective-from-the-uk/

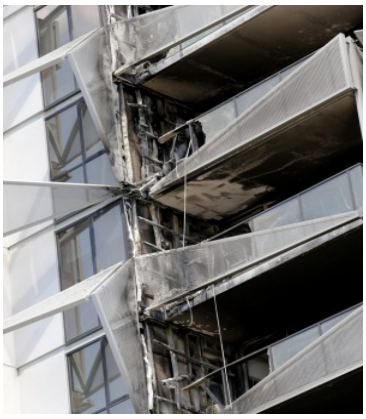
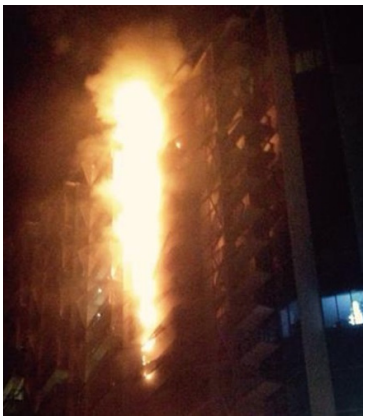
[2] https://www.linkedin.com/pulse/complacency-cradle-disasters-paul-wenman

Case Study 1: Mermoz Tower (France) – 2012

 [3,4]

- 18 storey apartment building in Roubaix, France.
- The building was refurbished in 2003 and the refurbishment included the installation of EIFS cladding (with a polyethylene core sandwiched in aluminium sheets) in the façade.
- On 14 May 2012 a domestic fire occurred on a 2nd storey balcony. This resulted in rapid vertical flame spread to the top of the building within a few minutes.
- This fire resulted in one fatality and six injuries.

Case Study 2: Lacrosse Building, Docklands, Victoria – 25 November 2014[5]


 [6]

- The fire is believed to have started on the balcony of a lower level apartment due to an electrical fault of an air conditioning compressor unit.
- The fire quickly climbed its way up to at least 17 floors to the top (reaching the 21st floor).
- 'The fire caused significant property damage (MFB estimated around $5million[7]) and business interruption losses with at least 160 apartments unoccupied for several months whilst restoration works were completed. We also understand that undamaged cladding remains on the building pending legal determination on who is responsible to replace the non-compliant material

[3] http://www.highrisefirefighting.co.uk/technique.html
[4] https://www.thesun.co.uk/news/3800401/grenfell-tower-cladding-fires-world-high-rise/
[5] https://scifire.com.au/lacrosse-docklands-fire-incident/
[6] http://www.theage.com.au/victoria/docklands-building-burns-hundreds-evacuated-after-fire-breaks-out-20141124-11t2hs.html
[7] http://www.mfb.vic.gov.au/News/UPDATE-Docklands-apartment-fire-caused-5-million-damage.html

- It is believed that the reason for the quick vertical fire spread is because of the combustible cladding on the balcony walls. The balconies were constructed of reinforced concrete but the cladding attached to it wasn't.
- According to a Victorian Building Authority spokesperson, the external walls of apartment towers aren't required to be fire resistant. "Under the Building Code of Australia, in apartments of Type A construction (more than three storeys) the external walls of the building are not required to be fire-resistant if they are non-loadbearing and are situated three metres or more from a fire source feature,[8]" the spokesperson said.
- According to the MFB Post Incident Analysis of the fire the use of non-compliant aluminium composite panelling (ACP) contributed to the spread of the fire.[9]

Case study 3: Grenfell Tower London – June 2017

- Out of the 350 people reported to be in the building that night, 65 people were rescued. At least 80 people have been confirmed dead[10] however, the total number has not been confirmed.
- The fire is suspected to have started on the fourth floor of a 24 story building with an electrical fault in one of the apartments.
- The blaze was not under control until 24 hours after it started
- [11]Experts who watched footage of the fire indicated the external cladding accelerated the spread of the fire [12]

- The building was built in the 1970's, with the new cladding installed as part of tower refurbishment in May 2016
- The building has been left in ruin, with almost all the 1000 homes in the building extensively damaged. All four facades and 22 apartments in a nearby building have also been destroyed[13]
- The Prime Minister, Theresa May has ordered a full public inquiry into the blaze and police have ordered a criminal investigation.

[8] http://www.smh.com.au/business/fear-over-highrise-tower-fire-risk-in-melbourne-20141203-11zgp7.html
[9] http://www.mfb.vic.gov.au/Media/docs/Post_Incident_Analysis_for_Lacrosse_Docklands_-_25_11_2014%20-%20FINAL-dd61c4b2-61f6-42ed-9411-803cc23e6acc-0.PDF
[10] http://www.bbc.com/news/uk-40301289
[11] https://www.thesun.co.uk/news/3803438/man-who-lived-in-the-flat-where-the-grenfell-tower-fire-started-packed-a-bag-then-raised-the-alarm-with-neighbours/
[12] https://www.ft.com/content/33a32fec-52b3-11e7-bfb8-997009366969
[13] http://www.bbc.com/news/uk-england-london-40272168

Case Study 4: Jing'an Shanghai – 2010

- An exterior façade fire occurred in a 28-storey residential building in Shanghai Jing'an District on November 15 2010 killed 58 people, and injured over 70 people.
- This fire was believed to be caused by welding resulting in fire spread on polyurethane insulation to external walls.
- The fire engulfed the entire exterior of the building, causing Secondary fires on most of the floors.

[14]

Drivers for the increased use of cladding

The main drivers behind an increase in the use of plastic foam cladding and insulation include;

They are excellent insulating material – The R value of a material is a measure of thermal resistance used in the building and construction industry. It depends on a solid materials resistance to conductive heat transfer. The higher the R value the better the building insulation's effectiveness is. Foam insulation has the highest R value rating per inch of thickness, up to two times greater than most other insulating materials of the same thickness (Rolls, batts, loose fill);

They are a cost effective, quick way to improve the look of existing buildings - Commonly used façade and cladding type materials are known as structural integration panels (SIP) and exterior insulation and finish systems (EIFS). SIP and EIFS panels are popular because they are relatively easy and fast to install and a cost effective means to improve the look of a high rise building; and

The rise of environmentally sustainable building design – Green building design is increasing in Australia and throughout the world. Public awareness of climate change and increasing evidence of the economic benefits of environmental sustainability (including the rising cost of energy) is driving the use of plastic foam insulation products in high rise buildings. Green designs are at the forefront of this movement as globally, 30-40% of all primary energy is consumed by buildings.

Scale of risk

It is difficult to estimate how many buildings contain this material. Currently our underwriting assessments do not specifically identify the presence of these materials in every case. However, even if we did ask for this information builders, contractors and owner/residents are often not aware that this material is being used in their building or that it is being used in a way that does not comply with Australian standards.

As an indicative measure, we do know it is often used in green certified buildings due its energy efficiency ratings. Different sources place green commercial buildings at around 20% of the market with a likelihood to grow to around 50% of the market by 2020[15]. The national scale of non-compliant use is also difficult to estimate. However, the Victorian Builders Association's recent audit of non-

[14] https://en.wikipedia.org/wiki/2010_Shanghai_fire#/media/File:Shanghai_jiaozhou_road_fire.jpg
[15] https://www.environmentalleader.com/2013/05/green-building-materials-254bn-annual-market-by-2020/

compliant cladding showed 51% of buildings audited were non-compliant with Australian Standards.[16]

Non-compliant use of cladding

As outlined above, this cladding material is considered to be a high fire risk. However, there are circumstances where it can be used safely in accordance with the NCC requirements i.e. under the "deemed to satisfy" approach, the material can be used if it meets the performance solution design approach and the associated expected risk to life (ERL) calculations required.

The most concerning risk with this cladding is non-compliant use, particularly in high rise buildings as there is a great threat to life. There is a broader problem in Australia with non-compliant building products. The 2011 Victorian Auditor General's Office (VAGO) report into the private building surveying industry in Victoria found that **96% of permits examined did not comply with the relevant building and safety standards**.[17] In 2015, Fire Protection Association of Australia CEO, Scott Williams said

> "*In the building and construction industry it is widely known that non-compliant products are bypassing the building approval process and are being installed in Australian buildings. This is a most significant concern to life safety and yet worryingly, is only identified when a fire event occurs"*[18]

In the two years following this quote these issues remain. We do not believe the issues around non-compliant building materials are confined to plastic cladding. We are noticing similar issues for other materials including braided hosing, electrical wiring and inferior PVC piping. We have addressed the broader areas of non-compliance in our previous submission to this Inquiry[19]. In addition to our previous submission, we believe the particular drivers for non-compliant use of this cladding include the following:

- **Insufficient or misleading testing –** These products are tested offshore. One of the challenges of offshore testing is that there are differences in definitions and testing facilities that can significantly affect the outcome. For example; China considers <5% asbestos as "no asbestos" whereas this does not align with Australian expectations of no asbestos. End users have little knowledge of the currency of the testing, they may believe they are doing the right thing when in fact they are using non-compliant material;
- **Changing and partially met standards.** Construction standards change and are updated regularly. At any one time this plastic foam cladding can meet some but not all of a standard. For example; "Australian Standard 1530 - Methods for fire tests on building materials, components and structures. Combustibility test for materials (AS1530)". Most of these plastic foam panels comply with parts 1,2,3 of the standard but do not comply with part 4 (which was updated in the 2016 edition). The material can be tested for use within the National Construction Code (NCC) or be sold as "compliant with Australian Standards" but it is difficult

[16] http://www.vba.vic.gov.au/a-z-information/audit-of-cladding-on-high-rise-buildings
[17] https://news.bdav.org.au/compliance-building-permits/
[18] https://issuu.com/fpaaus/docs/1296_firetalk_autumn_2015_06
[19] https://www.iag.com.au/iag-submission-senate-economics-reference-committee-inquiry-non-conforming-building-products

for end users (builders, contractors etc.) to know when testing was completed and if the material purchased is compliant with the most up to date standard;

- **National construction code allows these materials to be used with the alternate solution methodology; -** Essentially a work around is built into the NCC to allow the material to be used. There are three sections of the code which outline the criteria for this work around, however meeting these criteria can be as simple as using "Expert judgement." [20] further detail can be found in the national construction code. [21]
- **Misuse of product and lack of enforcement–** The product on its own may meet the standard but only when used in specific circumstances (i.e. in buildings under 25m). Despite the circumstances for use being clearly recommended, end users may not be aware of restrictions on a product. Additionally, as there is no monitoring of the specific use of this material and no mechanism to enforce compliance, end users who may be aware of when they can and can't use it, may choose to do so anyway in order to lower costs. The Melbourne Docklands apartment fire highlights how one type of this cladding material is being used within the Australian building industry with limited oversight; and
- **Certification process -** The approval of buildings that may contain non-compliant cladding is through a combination of government managed surveyors and private enterprise surveyors. They review and sign off that these structures, their components and systems comply with the NCC. The Victorian Auditor General's Office (VAGO) report into the private building surveying industry in Victoria found that 96 percent of permits examined did not comply with the relevant building and safety standards[22]. This suggests that the quality of Australian buildings is not as high as intended by the NCC and regulators and there are weaknesses in the current approvals process.

Implications for Insurance

When consumers purchase insurance they transfer certain risks to an insurer. Insurers identify and manage the costs of those risks to ensure there are sufficient funds to meet the cost of future claims as they arise. To do this, an insurance company has to determine the likelihood of an event occurring that results in someone making a claim, and the cost of that claim to calculate a premium for that consumer. The contribution insurance makes to society is to provide risk sharing, risk transfer abilities and a loss prevention mechanism. At IAG our strategy goes beyond providing protection to providing protection and prevention services, helping our customers and communities manage the risk they face. The main impacts of non-compliant cladding for insurance are;

1. **The unacceptable threat to the safety of our customers, employees and the broader community**. We do not want to see any loss of life or preventable loss of property due to this issue;

[20] http://www.greenstartconsulting.com.au/alternative-solution.pdf
[21] ftp://203.35.215.222/P&E/National%20Construction%20Code/NCC%202016%20Suite/NCC2016-BCA-Volume-One.pdf
[22] https://news.bdav.org.au/compliance-building-permits/

2. **Increase fire risk of buildings placing upward pressure on premium cost for consumers** - The frequent non-compliant use of this plastic foam cladding in construction is inflating the inherent risks associated with the structures that use it and placing upward pressure on the cost of insuring against this risk. IAG supports the exploration and use of green building materials and cost effective building construction. However, we want to ensure that in the design of these products, safety is always the main consideration; and

3. **Non-compliance can be a hidden risk. If we cannot accurately assess the risk**, **the uncertainty results in sub optimal outcomes for customers and insurers**. **-** There are gaps in the regulation and compliance of the use of plastic foam cladding. In some cases, these gaps leave no clear person liable for the use of this material. We price risk on the information we have, if products are misused or we are misled to believe they meet standards, this could result in insufficient premium collection or incorrect guidance to our customers. Accurate risk pricing results in a more efficient allocation of capital and this has flow on effect to customers, our investors and the broader community.

More specific impacts of this issue include:

Supply chain - To rebuild property after our customers make a claim we need both the expertise of qualified tradespeople and a well-functioning regulatory framework that governs safe building practices to protect the community. Our own quality framework is underpinned by supplier contracts that mandate our tradespeople must use products that meet Australian standards;

Overall the work carried out by our network of tradespeople must meet the high standards of our IAG dedicated quality auditing team. We actively work to reduce the risks associated with non-compliant cladding in our supply chain. However, there are community members who choose to be uninsured and without a well-functioning regulatory framework the people (and their broader communities) are left exposed to these risks.

Underwriting - We are currently in the process of reviewing the impact of plastic foam cladding, and its non-compliant use on our portfolio. Our underwriting assessments do not specifically identify the presence of these materials in every case. This ultimately could mean that we either have not priced the risk accordingly, or when determining the level of capacity, we assign to a risk, have overestimated the integrity of the building's construction to perform as designed in a fire situation.

In understanding the true extent of the exposure, it is most likely that we would look to moderate our capacity levels, tighten acceptance criteria and more appropriately reflect the increased risk that cladding may present in our pricing. It is important to bear in mind that these factors are not in isolation when underwriting a risk and that all relevant aspects, including occupancy, protection and external exposures are also considered when arriving at acceptance and pricing.

Claims: We are currently in the process of reviewing the impact of plastic foam cladding, and its non-compliant use on our claims process. However, as we have seen in many notable incidents, the use of this cladding can add significant combustible fuel to an otherwise non-combustible building. This therefore can lead to heightened loss severity resulting from an unanticipated increase in fire load.

Furthermore, where this material is discovered on a building following a partial loss situation, substantial rectification costs could be incurred as a result of the need to comply with current building regulations. In essence, insurers may be required to pay for the complete removal and replacement of the cladding; a situation not unlike the treatment of asbestos. Such extensive works may then have the potential to lead to business interruption claims emerging for loss of revenue.

Potential solutions

Based on the evidence, IAG believes plastic foam cladding should not be used in high rise construction buildings due to the increased fire risk it poses. In order to mitigate the risk posed by this cladding, we recommend the Government firstly considers an extensive national audit of all buildings to understand and quantify the current exposure.

We acknowledge and support recent announcements by State Governments across Australia to complete an audit of buildings containing aluminium composite panels (ACP's). IAG suggests this audit is expanded to include all types of plastic foam cladding. We understand the enormity of such an audit and suggest that in the first instance this could be limited to the most at risk buildings (i.e. over a certain height or level of occupancy) and expanded over time.

Secondly, in order to prevent further misuse of these materials' IAG suggests the Government consider tightening regulation and defining responsibilities and liabilities across the supply chain. As well as enforcing compliance with that regulation. IAG suggests to do this the Government should explore;

1. **National testing and monitoring compliance –** The use of the CSIRO or other relevant capable testing body within Australia would ensure compliance with the Australian Standards. Once tested, the product would need to clearly display that it meets these standards with some form of stamp or marking. A further solution could be the creation a products database where all products available are centrally recorded and their compliance with standards noted. This would benefit designers, builders, manufacturers and suppliers by providing a single recognised independent provider of reliable information. This database would also benefit manufacturers and suppliers who would be able to advertise that their product complies with the relevant standards and use it in advertising and promotional materials. Compliance in this area is key, as the effectiveness of policing diminishes after this point as products are diffused throughout the market. There is also an opportunity to better educate the community on the importance of clear branding, certification and installation requirements:

2. **Improved regulation of the importation, supply and use of these products** - There are clear deficiencies in the regulation of the use and importation of non-compliant products. Government has a key role in ensuring compliance with regulation and legislation and to facilitate and support safe practices and changes occurring across the supplier/importation market. The regulations around the importation and use of plastic foam cladding must be reviewed, particularly as the consequence of not doing so is potential loss of human life.

3. **Review of approvals system** – As previously stated, the 2011 Victorian Auditor General's Office report found that 96% of permits examined did not comply with the relevant building and safety

standards[23]. This suggests the quality of buildings in Australia is not as high as intended by the National Construction Code. We suggest a review into how and why this is the case, to ensure gaps in regulation and responsibilities are addressed. A whole of Government approach is needed to support the relevant building authorities to review current approval, surveillance and audit activities.

4. **Increased oversight of certification process** – As part of the above, we recommend specific attention is given to the cracks in the certification process. The certification process is predominantly private – there is limited oversight of this relationship and as a consequence a loophole exists where builders could deliberately not comply with standards or manipulate the intent of regulations. We suggest as a starting point, a mechanism be introduced where buildings over a certain value require additional oversight or double checking of practices and materials used. Another possible broader approach is to task government agencies to undertake random rolling audits, similar to the inspection services adopted by the Plumbing Industry in Victoria [24], at signoff or occupancy permit stage.

5. **Review National Construction Code's fire resistance criteria**- We strongly support green building design and the use of green building materials that result in energy efficient buildings. However, some green materials such as this cladding do increase the buildings susceptibility to fire. We suggest that the NCC's Fire hazard properties (A2.4) and Resistance to incipient spread of fire (A2.5) criteria are reviewed to ensure they appropriately cater for the increased fire risk of these materials. [25]

6. **Educate and inform people of the risks –** There are clear risks from the non-compliant use of this product. All participants in the supply chain (manufacturers, importers, builders, contractors, surveyors, certifiers, owners and occupants) need to be made aware of these risks and the appropriate action that can be taken to mitigate against it. Additionally, we suggest that combustibility information for each different plastic foam panel product be made available to the public. This information could be easily accessed if displayed on a website and would ensure end users are able to make an informed decision regarding the fire risk of the product they are using.

IAG supports the Government's recent steps to investigate this issue and the broader issue of non-compliant building products. IAG are willing to assist the Government in this process in any way we can.

If you wish to discuss this matter or make further inquiries please contact, Naomi Graham on (02) 9088 9450 or at naomi.graham@iag.com.au

Yours sincerely

Darren Maher
Group Chief Underwriting Officer

[23] https://news.bdav.org.au/compliance-building-permits/
[24] http://www.vba.vic.gov.au/practitioners/plumbing-audits
[25] http://mgoboard.com.au/wp-content/uploads/2015/07/BCA-Volume-One-2015.pdf