



HIA response to Impact Analysis of Proposals for Waterproofing in NCC 2025

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About the Housing Industry Association

The Housing Industry Association (HIA) is Australia's only national industry association representing the interests of the residential building industry.

As the voice of the residential building industry, HIA represents a membership of 60,000 across Australia. Our members are involved in delivering more than 170,000 new homes each year through the construction of new housing estates, detached homes, low & medium-density housing developments, apartment buildings and completing renovations on Australia's 9 million existing homes.

HIA members comprise a diverse mix of companies, including volume builders delivering thousands of new homes a year through to small and medium home builders delivering one or more custom built homes a year. From sole traders to multi-nationals, HIA members construct over 85 per cent of the nation's new building stock.

The residential building industry is one of Australia's most dynamic, innovative and efficient service industries and is a key driver of the Australian economy. The residential building industry has a wide reach into the manufacturing, supply and retail sectors.

Contributing over \$100 billion per annum and accounting for 5.8 per cent of Gross Domestic Product, the residential building industry employs over one million people, representing tens of thousands of small businesses and over 200,000 sub-contractors reliant on the industry for their livelihood.

HIA develops and advocates policy on behalf of members to further advance new home building and renovating, enabling members to provide affordable and appropriate housing to the growing Australian population. New policy is generated through a grassroots process that starts with local and regional committees before progressing to the National Policy Congress by which time it has passed through almost 1,000 sets of hands.

The association operates offices in 22 centres around the nation providing a wide range of advocacy, business support services and products for members, including legal, technical, planning, workplace health and safety and business compliance advice.



Summary of HIA Recommendations

The proposal

1. There is an undesirable incidence of water ingress in buildings of various class, however, the impacts of the proposals and the proportionality and practicality need to be made clear.
2. There is a strong emphasis on avoiding retrofitting – which should be supported by stronger evidence. HIA suggests significantly more work is needed and disclosure of actual damage data.
3. Expand the solutions to recognise current acceptable methods, through additional DTS detail, or model and acknowledged the significant change from current practice costs and trade-offs.

For analysis

4. The problem needs to be better articulated and examined by issue and effectiveness.
5. Use a conventional discount rate of 7 percent, and model a lower and higher rate of 5 per cent and 10 per cent respectively.
6. Cost-benefit analysis to account for:
 - the full range of skilled trades and manufacturing workers overlooked
 - cost of education and training related to revised changes
 - an over-statement of costs under the status quo and underestimating the cost of compliance.
7. The effectiveness of technical changes must account for the rest of the system's contribution to the problem and impacts on existing buildings
8. Model an alternative approach to waterproofing standards and other related design and safety goals, namely improved education and training, audit and enforcement of existing regulation.

For implementation

9. Should the proposed changes proceed, and NCC 2025, first support industry with adequate detail on 'how to' achieve requirements and proportionate industry transition period taking account of necessary material and design changes.
10. Provide industry with much needed relief by full subsidisation of the cost increases.



Introduction

Assumptions

o **The size of the problem**

i. Class 2 residential

ACIL Allen analysis (the analysis) estimates that on average per annum 21.4 per cent of new apartments will have a balcony / podium defect, 13.4 per cent of new apartments will have a roof defect, and 16.2 per cent of new apartments will have a basement defect. However, given the rate of defects reported in Table 3.1 these rates appear to be an over estimate.

ii. Class 3-9 (commercial use)

The analysis estimates that on average per annum 21.0 per cent of new commercial buildings will have a balcony / podium defect, 15.7 per cent of new commercial buildings will have a roof defect, and 21.0 per cent of new commercial buildings will have a basement defect.

These projections imply a high degree of certainty for rates of defect. For example, it is assumed that one in five new apartments will have a 'water defect'. This is a high incidence of defect with modest empirical evidence to support the assumption.

Moreover, there is also no subsequent layer of analysis to identify the category of defect, which will then be a determinant of its characterisation as a 'major' or 'minor'.

This has cost ramifications. Assuming a high incidence of defects without necessary additional layers of analysis/characterisation will inflate the forecast rectification costs associated and additionally skew higher the benefit projections of NCC 2025 changes.

iii. Class 7 buildings

Table 3.9 infers that all Class 7 buildings are basement car parks. This inference is not correct as not all Class 7 buildings are basement car parks. The table neglects to account for open deck car parks or Class 7b warehouses. The RIS should also consider construction of Class 7b buildings, which would be similar to Class 8.



The Regulatory Impact Statement (RIS) asserts: *“As discussed in the previous sections, estimates about the prevalence and costs of building defects vary significantly across studies in the literature. They also vary across jurisdictions...”*

The analysis suggests that independent expert estimates of the prevalence of defects for balconies and/or podiums vary from as little as 5.3 per cent to as high as 36 per cent. Significant variance in the reporting of prevalence and costs makes CBAs inherently unreliable.

The admission of significant variance across the estimates of the prevalence of various defects across the different elements of the infrastructure, particularly in Class 2 residential buildings, warrants further research and investigation to bolster the rigour and reliability of the analysis and net benefit projections.

Without true and verified justification of the true problems associated with water ingress issues for apartments and commercial buildings, have the potential to impose inefficient solutions that do not address core issue of the actual problems occurring on site.

o **Measurement of incidence of defects**

The economic analysis attempts to compensate for a lack of evidence but cannot overcome the problem with the starting point. The analysis uses the term ‘defect’ liberally and at times is not internally consistent. When describing defects it must be recognised that obligations have been in some cases deliberately limited to exclude spaces others for market forces to deliver.

Therefore, in case of carparks statements like “Most of the construction industry understands that water entry must be managed to prevent damage to finishes or to cars....” appears to suffer from a reverse attribution – defects are described in terms of the 2025 proposal’s, that include an expansion of obligations, outside of the scope of the NCC.

HIA are concerned this flows to assumptions, given the analysis relies on reports such as the NSW Research report on serious defects in recently completed strata buildings (September of 2021), where waterproofing ‘serious defects’ included aesthetic issues such as efflorescence.

o **Discount rates**

The cost-benefit analysis (CBA) is sensitive to the discount rate. Following guidance from the ABCB, the discount rate used in the CBA to discount the stream of costs and benefits of



changes related to waterproofing is 5 per cent (real) with sensitivity analysis conducted using a discount rate of 2 per cent and 7 per cent. The adopted discount rate of 5 per cent is low. A lower discount rate skews the net present value of the costs to be outweighed by the proposed benefits. It also does not account for the true private opportunity cost to the individual.

Federal Government agencies have conventionally adopted a 7 per cent discount rate. Moreover, previous ABCB studies have adopted a 7 per cent discount rate.

Therefore, it would seem to be more prudent to use a discount rate of 7 per cent. As stated in the report, higher discount rates produce a more negative result (that is, a lower net benefit to society) and lower discount rates produce a higher net benefit to society.

Given that convention has previously been a 7 per cent discount rate, it is advised that this be adopted, and the modelling be revised to reflect 7 per cent as the central case and test a higher (e.g. 10 per cent) as the higher rate. While not exclusively to address these issues, higher rates should be closer to the industries expected rate of return and do more to overcome highly uncertain assumptions.

o **Number of buildings**

The forecast average annual number of new Class 2 residential buildings (apartments) built in Australia over 2025–2034 is assumed to be 49,509. The number of new apartments completed in 2023 was 57,774 (ABS, seasonally adjusted). The 10-year average is 76,870 (seasonally adjusted). HIA suggests that an appropriate projected average annual number of new apartments over the period should approximate 65,000.

o **Causes of waterproofing defects**

In chapter 2, the analysis outlines a series of causes behind the rise of building defects. This is based on what it regards as relevant literature and stakeholder consultation. Of the varied causes, an absence or deficiency in building code standards is not identified as a cause for waterproofing defects.

This raises key questions such as– what is the basis or justification for changes to the NCC and waterproofing requirements? Moreover, has enhanced compliance and enforcement been considered as a more effective and cheaper alternative to increased standards?



Swinburne University and HIA research shows the vast number of the defect reports concerning concrete balconies, identified that the failure of waterproofing membranes and little or no maintenance contributed towards the water leakage through concrete cracks/joints/slab wall junctions. This resulted in not only making the habitable space under unusable but also corroding the reinforcement in the slab and slab/wall junction.

Some reports highlighted the overloading of the structures with heavy equipment and pot plants full of soil. Another notable serious defect was the balustrade failure at the base connection due to corrosion which is not addressed in the number or trades which would require training or the types of materials.

o **Class 3 to 9 buildings**

There is only evidence of defects in two classes (Class 5 and 9). There are no specific details of a problem or the types of defects in a Class 3, 6, or 8 buildings. Extrapolation of data across other building classes needs to be further justified.

For Class 5 and 9 buildings, most of the stated defects appear unrelated to the external envelope. Also, it could be argued that many are also not defects. For example, water below the tiles is not a defect unless the waterproofing membrane has also been breached.

It would be inappropriate to measure compliance against these updated proposals and assign any differences as defects. When analysing the ABCB sample for buildings in these two categories, only 1 of 74 buildings recorded a defect on a balcony/podium– a negligible 1 per cent of the total.

Furthermore, the prevalence assumptions listed in Table 3.9 appear high based on the data that is made publicly available and only covers defects in Class 5 and 9. The basis for costs is also questioned given only one relevant study is offered with limited data and not specific to external waterproofing or weatherproofing.

o **Mitigation of the problem**

“We could not find any evidence in the literature on the proportion of waterproofing defects that would be avoided through the proposed changes to the NCC. Stakeholders consulted indicated that around 80% of waterproofing defects caused during the design and construction phases of buildings could be avoided through the proposed changes to NCC provisions, with some defects continuing to occur due to workmanship and maintenance.”

The report offers no definitive evidence to indicate what proportion of waterproofing defects would be avoided through the proposed changes to the NCC. Industry stakeholders whose constituents will be impacted by the proposed changes are unable to interrogate the research and findings to determine the robustness of the projected mitigation of the problem. The report provides no clarity on the stakeholder consultation process and presents as a rough, unsubstantiated estimation.

The below is an excerpt from the earlier referenced research undertaken by HIA and Swinburne. Of the issues identified by the case studies, 1, 3, 6 and 7 only are addressed by the proposal and issue 5, as currently not a mandatory feature of most designs, issues may in fact increase, if made mandatory. The below suggests the target of intervention is misplaced.

Table 3 Causes for water leakage identified by various defects reports.

Referen ces	Issue 1	Issue 2	Issue 3	Issue 4	Issue 5	Issue 6	Issue 7	Issue 8	Issue 9	Issue 10
36	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
22	✓	✓	✓		✓	✓		✓	✓	✓
9	✓	✓	✓						✓	✓
45	✓	✓	✓						✓	✓
27	✓	✓	✓	✓					✓	✓
38	✓	✓	✓	✓	✓	✓			✓	✓
14	✓	✓	✓		✓			✓	✓	✓
42	✓	✓	✓						✓	✓
23	✓	✓	✓		✓	✓		✓	✓	✓
48	✓	✓		✓					✓	✓

- o Issue 1: Waterproofing membrane failure
- o Issue 2: Little or no maintenance
- o Issue 3: Insufficient or no slope, no hob, no overflow pipe
- o Issue 4: Cracked tiles cracked concrete/mold formation/corrosion.



- o Issue 5: Pipe penetration & floor trap
- o Issue 6: Inadequate movement joints (MJ)/poorly designed detailed MJ
- o Issue 7: Poorly treated construction joints
- o Issue 8: Porous internal walls and slabs
- o Issue 9: Lack of planning and design coordination
- o Issue 10: Lack of supervision, inspection, and certification

Taken together, HIA asserts that the estimate of 80 per cent is unsubstantiated and an overestimation. Of issue 1, most of the defects are caused by workmanship which would not be enhanced by the proposed waterproofing provisions.

The proposal to prepare a substrate for direct connection to a membrane, prevents the use of materials which would under normal circumstances be used to overcome irregularities or imperfections in the surface. T

he provisions attempt to overcome this by requiring the surface be adequately prepared. However, this is a high tolerance for substrates, given the nature of substrates (and likely led to the need for intermediate materials). No inspections or quality standards are in place to reassure its achievement and such a high degree of certainty from these proposals is optimistic at best.

Such a high estimate (80 per cent) does not appear proportional to the number of cases where the elements proposed were only those present in the failure, and given other causes are also not in scope to be addressed.

HIA are unable to engage further with these estimates without the data. For example, to understand what degree are instances of water leakage are simply a product of the age of the relevant infrastructure?

The overarching point is that the imposition of enormous costs on the construction industry and households based on educated guesswork is fraught with risk. The enormous cost burden on households necessitates rigour in the evidence base and investigation into the likelihood of mitigation of waterproofing defects.

o **Types of waterproofing defects expected to be addressed**

The report outlines the following defects relevant to sub-surface water ingress in Class 2 and 7 buildings: inadequate substrate preparation; roof and podium leaking into levels adjacent and below; uncontrolled lateral and rising water entry; water entry from rooftop; water entry into habitable spaces; water entry via failed membrane; water entry into habitable spaces and basement carpark; and water entry via windows.

Again, despite no nominated Deemed-to-Satisfy detail, it is unclear what underpins such confidence most items listed will be resolved by design compliance, and few, if any, caused by installation issues that would not be addressed by the NCC provisions.

The following types of defects would not be addressed by the proposed changes to waterproofing provisions: absence of overflow, bathroom leaks, defective waterproofing installation, efflorescence, water entry via windows and failure to construct design details.

Therefore, not all major waterproofing defects are in scope for sufficiently defensible confidence that wholistic mitigation can be achieved.

o **Costs associated with defects**

"...the ranges of the size of the waterproofing defects problem outlined above, we estimate that the costs associated with waterproofing defects that could be potentially addressed through the NCC (i.e. that are relevant to the design and construction phases of buildings) are in the order of:

- between \$121 million and \$314 million per year for Class 2 buildings*
- between \$403 million and \$1.2 billion per year for Class 3 to Class 9 buildings."*

It is important to note that these costs could be addressed, but they are not going to be entirely prevented or expunged. As stated earlier in the report, the vast majority of instances of waterproofing defects relate to sub-surface water and it is not feasible to have prevention.

Therefore, it is only possible and must be clearly understood that the measure will only mitigate against a portion of the problem and associated cost range and future rectification required.



o **Cost of waterproofing defects in the literature**

In the stated summary of the estimates of cost of waterproofing defects in the literature, the Analysis report (Table 3.6) cites ABCB data (2023). This data has not been published and was not made available on request.

This is unusual practice in research and reporting. It does not allow for third-party scrutiny of the data/research, which is made more troubling given the concerns with assumptions and data which has been made public and given the potential for enormous cost to be imposed on industry and households, the data underpinning findings and recommendations must be made publicly available and further scrutinised.

Further concern is warranted when the analysis makes assumptions based on unpublished data, offering statements such as, “It is assumed that each defect refers to one balcony” (page 18). There is no apparent basis for this assumption. Unless this is specifically shown and detailed in the data, this is not considered a valid assumption.

The analysis also offers the same assumption in its analysis of the *Building Confidence Report: A case for intervention* (CIE, 2021). The assumption is not supported. The CIE report captured waterproofing and weatherproofing broadly and could have included a range of defects or multiple defects of indeterminate causes.

It is therefore probable that the rectification cost assumptions (see Table 3.8) are an overestimation. This will in turn skew the cost benefit analysis and produce a more favourable case for changes to NCC. Coupled with high and unsubstantiated effectiveness assumptions, implies the potential for benefits will not be accurate.

o **Waterproofing: evidence on the areas of failure**

Firstly, in view of the total volume of Class 2 and Class 7 buildings in Australia, (1,729,385 apartments as of the June quarter 2022¹) this is a strikingly small sample size. Of the 38 case studies (provided to the ABCB confidentially), there is no specificity offered on the nature and severity of the waterproofing defect, namely whether it was a minor or major defect.

¹ Australian Bureau of Statistics, publication: ‘Dwelling Stock’



The analysis goes on to make a calculation (estimate) for average rectification cost per defect based on the number of buildings where the defect occurred, the number of locations within buildings where the defect occurred, and total rectification costs across all buildings in the sample.

The result of the analysis is, as an example, \$23,895 as an average rectification cost per water defect on a balcony / podium. An accurate representation of the real-life incidence of both major and minor water defects in the sample size is paramount to the robustness of this analysis.

For example, should the sample size include a small number of very large and costly water defects and the remainder of the sample size include only very minor water defects, then this will skew the dollar-value cost to a much higher amount per defect.

The composition of the sample size requires careful oversight and rigour with particular attention paid to the size/severity of the defect. An accurate representation of the incidence of both major and minor defects is absolutely essential.

Moreover, if industry is to meaningfully engage with the analysis, it must deliver full transparency as to the nature, size and severity of the defects used in the sample case studies.

o **Previous attempts to regulate**

The report indicates that since the inception of a construction code in 1988 there have been efforts to mitigate against water leaks through related provisions. The report goes on to state that there is still evidence of “a very high proportion of buildings” experiencing defects.

However, it must be acknowledged that the cause of these defects is not the incompleteness of the NCC (lack of regulation), but rather workmanship and installation which cannot be addressed by the NCC.

o **Regulatory failure**

The analysis states that the NCC has failed to keep pace with the rise of D&C contracts and changes/innovations in the materials used for waterproofing. The rise of D&C contracts and associated defects has not been established by anything other than anecdote the NCC



applies to all buildings in the same way and is agnostic to the type of contract used. If this was the key cause the implication is other contracts adopt higher standards, and, these should be excluded from the problem.

To the extent that non-compliance is part of the current regulatory environment, this is not overcome with obtuse and high level obligations. This in fact could lead to more regulatory failure due to the lack of quantification or clear DtS standards in the NCC.

Performance Solutions are often compared to the DtS to demonstrate an adequate level of performance has been achieved. In some cases such as the Fire Safety Verification Method, this comparison is a mandatory part of the analysis required to demonstrate compliance. If there are no DtS provisions which to benchmark against, complexity, inconsistent application and greater regulatory failure are invited.

o **Treatment of refurbishments**

The report indicates that many existing buildings may be unable to comply with the NCC provisions. This is a significant factor that needs to be considered in the costs.

New building work in existing buildings will need to comply as will remedial building work and a trade-off for setting higher standards, the costs cannot be excluded methodologically.

It must be noted that renovations of Class 2 buildings is a significant market and ought not to be excluded.

o **Construction cost estimates provided by WTP and ACIL Allen**

WTP and ACIL Allen are noted as the sources for the indicative percentage increase in construction costs of different building areas to meet the proposed waterproofing requirements. Once again, this assessment appears not to be publicly available.

This is unusual practice in research and reporting. It does not allow for third-party scrutiny of the data/research, which is made more troubling given the concerns with assumptions and data which has been made public.



Given the potential for enormous cost to be imposed on industry and households, the data underpinning findings and recommendations must be made publicly available and stand the test of third-party scrutiny and appeal.

The cost increases outlined in Table 6.5 were adjusted to reflect, among other things, the proportion of buildings built using a concrete frame. There is an assumption that only those buildings built using a concrete frame will be affected by the proposed increased stringency in waterproofing requirements in the NCC.

This is incorrect, the changes are not limited to buildings with concrete frame. The revised performance requirements and DtS provisions, FID5, FID6, FID7, FID8, FID9, FID10, FID11, FID12, FID13 and FID14 are not limited to concrete buildings.

o **Considerable uncertainty necessitates further research and investigation**

The cost-benefit analysis features considerable uncertainty with many of the input assumptions. The analysis cites- *"...the uncertainty associated with many of the assumptions used in the CBA..."*. Considering the presence of such uncertainty it is therefore untenable to proceed with the changes under current analysis.

This admission warrants further research and investigation to bolster the rigour and reliability of the analysis and net benefit projections, and as a first step something consultation should have been used to inform.

Sensitivity and breakeven analysis have been undertaken to account for areas of data uncertainty. These attempts to compensate for a lack of evidence cannot overcome the weakness of starting assumptions.

Overt weaknesses in the quality of the analysis are evident as by necessity, numerous questionable assumptions are made. Assumptions, (particularly the uncertainty of the problem) and the cost of the solution need to be better informed.

"... estimating the prevalence of waterproofing defects is important to establish the size of the problem that the proposed changes to the NCC are aiming to address, and to estimate the impact that the proposed changes would have. Ideally, this would be done through a survey of building owners across different building classes and jurisdictions and/or audits of buildings."



It is advisable that the robust research and investigation referred to in the analysis be undertaken.

The Cost Burden

The RIS projects that there will be a total financial cost of \$310 million over 2025–2034 through the proposed changes to waterproofing requirements for Class 2 buildings alone. It is stated that the cost impost will lie with: 1) households, 2) government, and 3) the ABCB.

In view of the fact that housing is a basic human right and essential infrastructure, due care must be given to the timing of introducing such an enormous cost burden that will primarily fall on non-government sectors of society.

Households are projected to bare 98.7 per cent of total cost over the selected period 2025–2034. Ideally, there would be a healthy proportionality in the imposition of the cost burden.

1. Now is not the time to be increasing costs for residential buildings

“Based on a survey, the Building Confidence Report: a case for intervention (CIE) estimates that 52% of all defects in apartments are caused by the initial build (that is, defects that are relevant to NCC compliance) and 48% by maintenance and other factors.”

“Based on the above evidence, we have assumed that the proportion of waterproofing defects that are caused by the design of buildings is 52% for Class 2 and 49% for Class 3–9 buildings.”

The above-mentioned assumptions illicit the question– is it justifiable to add significantly to the cost of a new apartment, during a period of historically low affordability, when only approximately half of all defects have their origin in the design and build?

Prudence suggests that this may not be worthwhile, and alternative pathways to mitigation against water leakage defects ought to be prioritised.

2. Households will by far bare the predominant portion of the cost burden

It is vital to note that it is the household that bears the near-full brunt of the capital cost under the proposed changes to waterproofing requirements (NCC 2025). Moreover, this is when



construction costs are elevated and housing affordability is at a historic low, as discussed earlier. According to the analysis, households are projected to bare 98.7 per cent of total cost over the selected period 2025–2034 (\$306 million). The added cost for every new apartment will only further delay homeownership for many Australians.

“Consistent with previous analyses, for this CBA, we assumed that the additional compliance costs associated with the construction of a new dwelling or a new commercial building are passed through in full to the consumer (owners/occupiers).”

When it comes to specifically the additional compliance costs associated with the construction of a new dwelling, the analysis assumes full cost pass-through to the consumer (owner-occupier).

The ramifications of a full cost pass-through to the consumer demands extreme caution. As discussed earlier, housing affordability is at a historically low level and regulatory changes of this magnitude bearing costs of this scale are barely justifiable under these present conditions.

“...the NPV for Class 2 to 9 buildings does not turn negative (i.e. the BCR does not drop below 1) when the construction costs of meeting NCC 2025 are increased by 25%...”

The NPV analysis offers a societal assessment of benefits. However, insufficient attention is given to the impact on the household, as they will ultimately bear by far the greatest proportion of the cost of the proposed NCC 2025 measures.

As stated earlier, households (individuals and families) are projected to bare 98.7 per cent of total cost over the selected period 2025–2034 (\$306 million). An increase in construction costs of up to 25 per cent, HIA considers this to be an unacceptable impact in the near term on housing affordability.

There is great net societal benefit to lowering the enormous financial burden of entering home ownership and reducing the household indebtedness of existing homeowners through more affordable housing.

“The societal benefits that would largely be derived from avoided rectification costs are estimated to be well in excess of the construction costs associated with meeting the proposed waterproofing requirements for these buildings.”



However, a family or individual face significantly increased dwelling cost and the associated increase in costs (e.g. maintenance) borne by the developer. This in turn could impact the feasibility of some projects, leading to lower supply.

Previous ABCB analysis (Residential energy efficiency) of NCC changes have placed these impacts as central to justification for intervention.

3. Categories of costs imposed by proposed changes

The analysis falls short of accounting for the breadth of categories of cost of the waterproofing provision changes. It states that waterproofing provisions will not impact the costs incurred during the planning, design and verification phases of building development. This is disputed, the proposals will increase the time and resources required and therefore costs in the design and planning phases.

It will also result in a substantial increase in the number of performance solution reports required. This is part borne by the lack of DtS provisions that have been included the NCC 2025 proposals for Class 7 and 8 buildings (including basement carparks). The limited availability of practitioners to prepare these assessments must also be considered. This will also increase costs.

The changes to the Performance Requirement, the broad scope of the definition of water, the capture of subsurface water beyond the envelope of the building as reflected in the Performance Requirement; must also be factored into these costs.

i. Roofs and balconies

The proposed waterproofing provisions, including the need for stepdowns will eliminate the use of flat plate slabs and require an increase in slab thickness. Increased slab thicknesses for roofs and balconies will increase building height. This can affect costs in many ways, including:

- Causing buildings to exceed 25 metres in effective height which will trigger additional fire safety or other NCC controls that will also add to cost.
- Building height limits – the additional slab thicknesses could result in buildings exceeding maximum height limits under planning controls meaning the number of storeys in a building will need to be reduced impacting on project feasibility.



- Reduction in ceiling heights which can have an impact on building amenity.

The analysis states that most waterproofing membrane manufacturers require the membrane to be placed on a surface with falls. The warranty is voided in the instance of ponding of water on the membrane. Therefore, if the slab is placed flat it requires a topping to falls prior to membrane. There is a question as to the evidence for this statement.

The report states that with either a topping for falls or structural slab to falls, both scenarios require a perimeter kerb or hob. However, there is no requirement under the NCC for a perimeter kerb or hob. AS 4654 provides for end or downward termination without a hob.

It also goes on to state that hobs to both sides of movement joint through roof is cost neutral since this is required for both scenarios under Building Code of Australia. Again, this is not correct- NCC 2022 requires the joint to be protected in accordance with AS 4654.2. Clause 2.9 of AS 4654.2 provides for continuous movements joint as contained in Figure 2.14 of AS 4654.2. This does not require the use of a hob.

A requirement to provide a kerb or hob around the perimeter of roofs, balconies podiums and the like and on each side of a movement joint has significant construction implications which will add to costs. In terms of concrete construction, it will require additional detailing of the formwork to create the hob.

The hob will also need to have additional reinforcement that is tied into the primary slab reinforcement. This adds costs in terms of materials as well labour for the steel fixing. Creating hobs in framed construction (as proposed by FID6) is even more difficult.

It will require precise detailing to ensure the structural integrity of any hob and the floor/roof structure. HIA is not aware of any such provisions within current timber framing standards that include such details.

Where a kerb or hob is placed on a trafficable surface, the height of the floor surface will need to be increased to bridge over the hob to ensure the hob does not become a trip hazard. This creates further design complexities.

The assessment suggests that in flat plate scenarios, a hob still needs to be placed under the sliding door arrangement to allow compliant upward membrane termination height. HIA does not consider this to be the case. AS 4654.2 provides for a compliance option that facilitates a level threshold without the need for a upward membrane or hob under a door.



The above examples suggest that there may be an over statement of costs under the status quo underestimating the cost of compliance. HIA suggests costs be revised to reflect this and other feedback on the analysis.

ii. Basements

The current NCC provides recognised concessions for Class 7 and 8 buildings including basement car parks. It cannot be argued that the removal of this concession is not a change in stringency.

Currently, Class 7 and 8 buildings are exempt from the waterproofing requirements in NCC 2022 where it is deemed that there is no necessity for compliance. The analysis states that the proposed changes are therefore deemed to be cost neutral.

However, this is not consistent with the NCC PCD as the Class 7 and 8 exemption has not been included in the Performance Requirement. It is therefore increasing the obligation and requirements as the NCC is specifying that all Class 7 and 8 buildings must achieve the same level of waterproofing and weatherproofing as other building classes.

It fails to take into consideration the nature and use of Class 7 and 8 buildings. As all basement Class 7 car parks will require a Performance Solution and must demonstrate that water is being collected, redirected and drained and specified in the Performance Requirements, this must be included in the costs of construction.

It cannot be considered cost neutral. Further, the ABCB has previously stated the cost of Performance Solutions in commercial buildings is \$10,000. The ambiguity of the new Performance structure is likely to significantly increase both obligations and costs, without a corresponding change in direct benefit.²

The report also states that most of the construction industry understands that water entry must be managed to prevent damage to finishes or to cars and prevent unhealthy conditions such as slip hazards.

The objectives of the NCC are: safety, health, amenity, livability and sustainability. Property protection, including the protection of the paintwork of vehicles parked in a carpark is not an NCC objective. Proposing that amenity extends to non-building items is not supported and

² https://consultation.abcb.gov.au/engagement/consult-ris-process-development-ps/results/ris_for_decision_process_for_the_development_of_performance_solutions.pdf.



has been conclusively addressed in previous productivity commission reviews as outside the scope of the NCC. Thus, vehicle preservation is a matter currently addressed by market forces. To address it grains against the above argument of neutrality when exemptions for such buildings achieved under performance solutions.

The NCC only requires slip hazards to be managed in stairs, ramps and landings. The non-habitable nature of a Class 7a basement carpark is that the presence of water would not impact the health or amenity of the occupants.

The current NCC provisions have long recognised that water is likely to be present in carparks and could come from a range of sources including water that is tracked into a carpark from vehicles that have been driven in the rain. Open-deck carparks are also fully exposed to rain and weather. Noting that the use of an open-deck carpark and a basement carpark is entirely the same, it is not clear why a higher standard is proposed for basement carparks.

HIA argue by exempting the need for these Class 7 buildings and many others such as horticultural intensive settings or Farm Sheds to comply with waterproofing to a standard required for a habitable space, would avoid the future accusation and the regulatory burden that these spaces, are considered defective. It would also remove uncertainty for their owners, constructors or approval authorities.

In conclusion, the projected indicative percentage increases in construction costs for all relevant building classes appear to be a considerable underestimation. Expressing outcomes of regulation as changes as a percentage of construction costs only serves to diminish its size by exploiting the relative difference between the two figures.

As a cost benefit analysis, this metric total construction costs contains elements which are not essential to the analysis and no more justifiable than expressing them as a percentage of GDP. The marginal increase in dollars expressed on a per dwelling basis should be presented so its weight can be directly compared to the claimed benefits.

4. Skilled trades requiring costly education and training

The analysis asserts that the main stakeholder groups that are likely to be directly affected by the proposed changes to waterproofing requirement under the NCC and would need to undertake training to understand the proposed changes are:

- civil and structural engineers



- architects and architectural draftspersons
- quantity surveyors and construction estimators
- building inspectors

This seems to be a narrow and incomplete view of the trades affected by the proposed regulatory changes. While it is acknowledged that these skilled trade occupations will require training, none of the stated skilled trades persons are those that will undertake actual building work on site.

There would be several occupations that would certainly also require upskilling at least initially to avoid compromising waterproofing. Furthermore, additional skilled trades people requiring education and training would include builders, site foreman, project managers, concreters, water proofers, site supervisors, brick and block layers, carpenters, roofers, and balustrade installers.

Builders are an obvious omission, as those ultimately responsible for a building complying with the NCC.

Finally, supply chain skilled trades would also almost certainly require education and training. The education cost must also consider the education and training of suppliers and manufacturers.

5. Increased costs reduce borrowing capacity, displace other preferences and overall leads to fewer dwellings

New housing is already one of the most highly taxed and regulated sectors in the economy, and any further increases in costs via additional regulation would only make that situation worse and ultimately result in less homes being built.

More expensive homes necessitate larger home loans. This acts as a barrier to cost-constrained consumers seeking to purchase a home.

When consumers increase their household debt, this displaces spending on other goods and services, and in aggregate puts downward pressure on consumer demand and therefore aggregate demand. When consumer demand softens, business activity weakens and overall economic activity slows.

6. The alternative option of enforcement

The analysis considers three categories of costs associated with the proposed new waterproofing provisions:

- construction costs — these are the additional costs that would be incurred by developers to meet the proposed new waterproofing requirements
- industry costs — these are the costs that would be incurred by the industry to implement the proposed new waterproofing requirements
- government costs — these are the costs that would be incurred by the government to transition to the proposed new waterproofing requirements.

Better education, training and enforcement of existing regulation could be considered as a viable alternative to further changes to waterproofing provisions within the NCC.

For example, in the case of NSW, the analysis notes, "... we have assumed that the recent changes to the regulatory framework of buildings in NSW have decreased serious defects in Class 2 buildings by 27 per cent (i.e. the percentage change in the incidence of serious defects from 2020 to 2021)."

While costs of surveillance are not disclosed, they are likely a fraction of those proposed under the unitary analysis. This also supports the argument that the issue the proposal is trying to address is not necessarily with the NCC standards but rather how they are applied and enforced.



Conclusion

The establishment of a national building code is fundamental to the orderly operation of the residential building industry in Australia. The NCC should be considered the pre-eminent building technical code for all construction in Australia.

Unfortunately, HIA is unable to support proceeding with the waterproofing provision changes in their present form.

The analysis' stark admission of uncertainty with a considerable number of factors warrants further research and investigation to bolster the rigour and reliability of the analysis and net benefit projections.

The research and investigation, including the volume and transparency around case studies, is deficient for the impact and offers insufficient justification for the enormous cost that will be imposed. A positive net societal benefit outcome by an analysis characterised by uncertainty is not sufficient to impose an increase of up to 25 per cent, particularly on Class 2 buildings.

As it stands the prevailing conditions in the housing industry are dire. The National Housing Supply and Affordability Council assert the following in their *State of the Housing System 2024* report- "There is no denying the housing crisis we are in. Housing affordability has deteriorated further to its worst level on record, placing many additional renters and mortgage holders in housing stress."

Government and the ABCB must strongly consider this point in the pursuit of their mandate.

Given the current state of industry, HIA would prefer to see an alternative option modelled which focused on education with a focus on onsite understanding and compliance and enforcement of existing provisions and best practice.

HIA recommends reconsideration of the near-term imposition of large-scale regulatory changes, including all amendments to the NCC.

These provisions must not be introduced prior to a lengthy (3 year) transition with further comprehensive education on the aims of the provisions, their application and their interactions with other NCC requirements.