



Beyond the Building Code

Perils of Stopping at the Minimum Standard

INTRODUCTION

Building codes play a significant role in determining a building's long-term quality, safety, and energy efficiency. In Australia, this is fulfilled by the National Construction Code (NCC), which specifies the minimum necessary requirements for safety, health, amenity, and sustainability in the design and construction of new buildings (and new building work in existing buildings).

Design and construction choices affect operational performance and maintenance costs during the lifetime of the building. Building codes, such as the NCC, help designers and builders “get it right” from the start. Once installed, some building components may be replaceable or upgradeable, but some aspects of how the building performs are “baked” into the design. This is especially the case for plumbing and waterproofing.

Due to various factors—from stronger fire safety regulations to higher expectations for liveability—building regulations have grown more onerous in recent years. This, along with increases in the cost of materials and labour, has seen the cost of construction rise to some of the highest levels we have ever seen.

“Chasing the minimum” is the default stance many architects, designers, and builders take when faced with the need to increase margins and deliver projects on schedule. This practice involves constructing buildings to the bare minimum, following the regulatory requirements to the letter, and making no attempt to exceed the performance level or specification set by the standard—even if doing so would result in better building performance over the long run. Is this a mistake?

As we will discuss below, pursuing the minimum in plumbing and waterproofing can actually result in cost increases, defects and projects that fail to meet expectations. In contrast, a building design that exceeds code requirements can reduce risks of non-compliance, save projects time and money and lead to a healthier, safer and more durable built environment.





RELATIONSHIP BETWEEN BUILDING DEFECTS AND THE MINIMUM STANDARD

Recently, the industry has become more aware of defects and failures in newly built multi-storey residential complexes. A joint Deakin University and Griffith University study in 2019 (referred to below as the “joint study”) found that among the 212 building reports that were examined across New South Wales, Queensland, and Victoria, 85% had at least one defect.¹ A similar New South Wales survey in 2021 found that 39% of strata buildings in the sample experienced serious defects, the majority of which related to waterproofing (23% of all buildings surveyed).²

Defects lower overall construction quality but can also result in higher rework costs, unforeseen delays, and a negative reputation in the industry. Defects, especially those related to plumbing and waterproofing, can take some time to manifest, so it might be challenging for practitioners to

identify the root cause. This can, in turn, obstruct efforts to diagnose and fix defects in a timely manner.

Many interviewees in the joint study expressed concern about a variety of elements relating to the regulatory framework that contribute to the occurrence of building defects.³ Among the more notable concerns expressed by practitioners fixing waterproofing defects was that the minimum Performance Requirements outlined by the NCC do not reflect best practice. The key areas for improvement include increased trade training in waterproofing, a systems approach to identifying suitable membranes for different substrates, a register of independently-tested membranes, further guidance for those rectifying membranes, and updated standards to ensure remedial works are completed in accordance with the best industry methods.⁴



When designers place too much emphasis on the bare minimum, they miss out on opportunities to improve functionality and explore the viability of other design options.

PERILS OF STOPPING AT THE MINIMUM

The joint study highlights a growing industry problem, which is that design and construction professionals often treat the minimum acceptable standards of construction as a checklist rather than the legal minimum. This checklist approach to the minimum requirements means that, while the building may be compliant on paper, it may not, in fact, deliver a comfortable, safe and healthy environment that is fit for purpose given the site conditions and local climate.

Plumbing and waterproofing tend to suffer from this mindset as consumers prefer to invest in visible areas such as expensive bathroom and kitchen fittings but the minimum on quality plumbing behind the walls. Additionally, many consumers are unfamiliar with living in a high-performing or energy-efficient home so cannot appreciate the benefit of investing in improved designs. Long-term benefits of high-performing homes include enhanced liveability and lower operating costs.

What are the risks?

Stopping at the minimum is not what is 'best' for the project.

The ongoing increase in building defects across Australia indicates an excessive emphasis on achieving a minimum level of NCC compliance as opposed to a "good" level that is best for the project over the long-term.

Some minimum codes and standards prevent defects by requiring your builder to adhere to certain parameters. Others, such as the required level of waterproofing, are meant to ensure that you have the minimum level of protection. However, you can get increased protection and thus significantly reduce or even eliminate the risk of building damage by exceeding the required waterproofing minimums. The best illustration of this is to completely waterproof wet walls as opposed to just complying with

the minimum requirements, which is 150mm around any wall penetrations (see AS/NZS 4858:2004 "Wet area membranes").

Stopping at the minimum is more expensive.

While achieving the minimum standard may be technically "fit for purpose", it may not be the most cost-effective option. For instance, completely waterproofing a bathroom might require more waterproofing material, but it is frequently quicker than strictly following the minimum requirements, which are more detailed and have varying levels of specification depending on the application. Not only is the extra material cost offset by time saved, but there is also less room for error due to the increase in material compared to what is used for a bare minimum job.

Stopping at the minimum reduces design flexibility.

When designers place too much emphasis on the bare minimum, they miss out on opportunities to improve functionality and explore the viability of other design options. For example, over the last ten years, there has been a trend to size plumbing items to the minimum required. Under the regulations, DN80 is the minimum riser size for a sole floor waste in a bathroom, but DN100 is far cheaper and has many more fittings available.

Stopping at the minimum is not best practice.

Experts have noted the potential mismatch between the NCC minimum requirements and best practice, but there are also examples of mismatched requirements between the Australian standards and the NCC. An instance of this in the plumbing sector is in the recently revised AS 3740:2021 "Waterproofing of domestic wet areas", which requires the recessing of the leak control flange into the substrate. However, in NCC Vol. 2, Figure 10.2.29 allows the flange to protrude above the substrate creating the potential for ponding at the most critical waterproofing junction.



WHY GO BEYOND THE CODE?

Better buildings

The NCC and the related Australian standards are a minimum that must be met but they can be exceeded. Part of changing the current mindset of “chasing the minimum” is to understand the benefits of exceeding the code.

One of the key reasons for exceeding the minimum code requirements is that it results in higher performing buildings that are fit for purpose and have fewer defects. Damage resulting from waterproofing failures can lead to serious building issues that affect the life of the structure as well as the wellbeing of its occupants. By going above and beyond the code requirements when building or renovating, such as by applying waterproofing membrane completely to wet walls, you can reduce the risk of water penetration now and well into the future.

Reduce costs

Higher performing buildings may be slightly more expensive than minimum-standard buildings during the early design and construction stages, but a long-term cost analysis gives a more accurate picture of the true cost. The financial advantages of investing in better buildings include operational and maintenance savings as well as increased property values. There are also the intangible benefits of a well-designed work or living space, including improvements to health, wellbeing, mood and productivity.

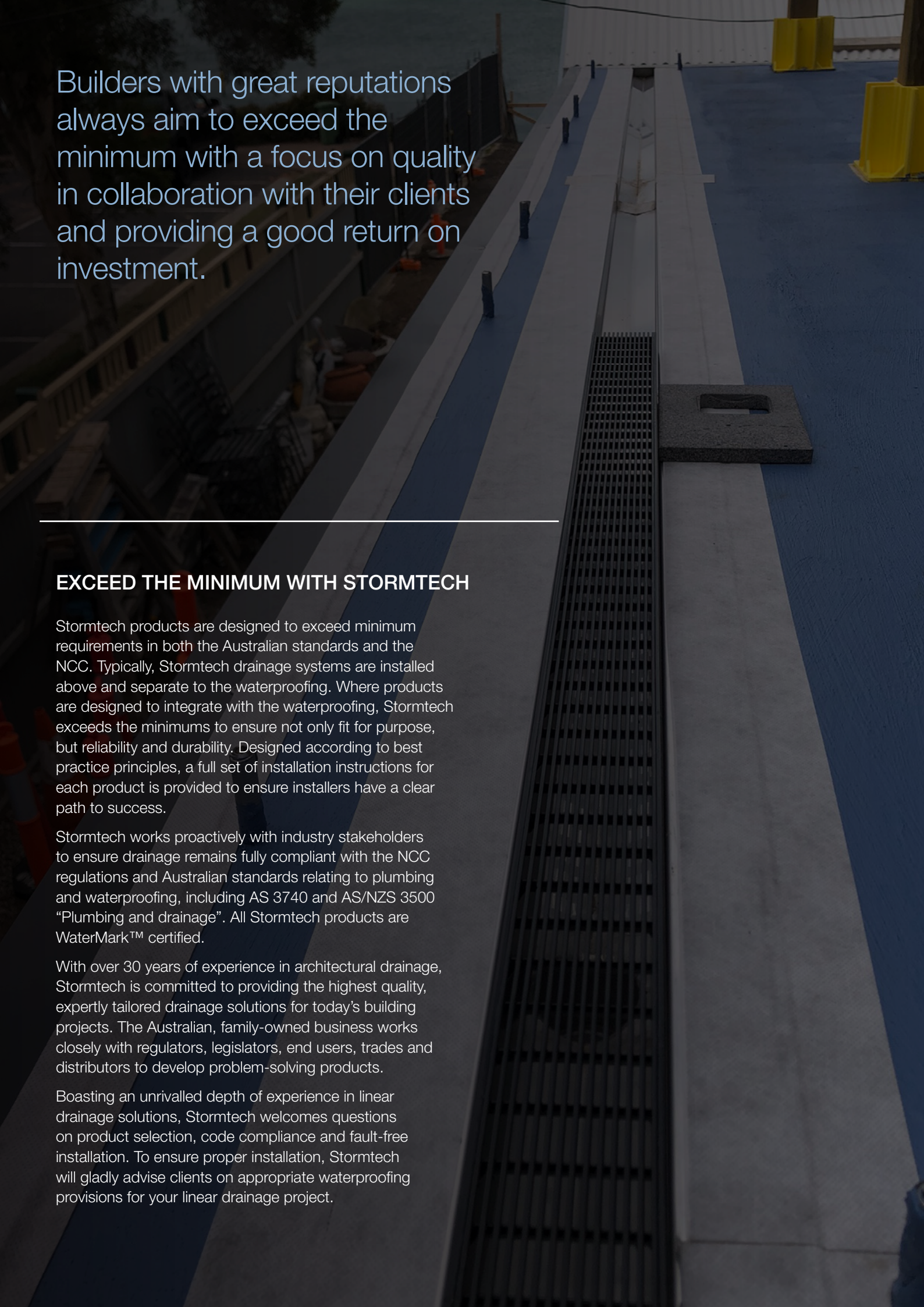
Reduce risk of non-compliance

Building to the minimum standard increases the chance that an error or oversight may result in non-compliance with the relevant regulatory requirements. Building code violations may incur fines, penalties, hold up project completion, and even necessitate rebuilding. When you plan to exceed building codes, you can increase the margin for error and avoid penalties or delays while building more liveable and efficient structures.

Construction benefits

Builders with great reputations always aim to exceed the minimum with a focus on quality in collaboration with their clients and providing a good return on investment. Buildings that exceed code requirements are more attractive to potential owners and tenants and contribute to communities that are safe and deliver a good quality of life.

This proactive approach ensures construction efficiencies are achieved as well. With fewer variations and less need for reconstruction when a structure does not meet code, construction costs are decreased. This means fewer obstacles to construction projects being finished and approved, on time and within budget.



Builders with great reputations always aim to exceed the minimum with a focus on quality in collaboration with their clients and providing a good return on investment.

EXCEED THE MINIMUM WITH STORMTECH

Stormtech products are designed to exceed minimum requirements in both the Australian standards and the NCC. Typically, Stormtech drainage systems are installed above and separate to the waterproofing. Where products are designed to integrate with the waterproofing, Stormtech exceeds the minimums to ensure not only fit for purpose, but reliability and durability. Designed according to best practice principles, a full set of installation instructions for each product is provided to ensure installers have a clear path to success.

Stormtech works proactively with industry stakeholders to ensure drainage remains fully compliant with the NCC regulations and Australian standards relating to plumbing and waterproofing, including AS 3740 and AS/NZS 3500 “Plumbing and drainage”. All Stormtech products are WaterMark™ certified.

With over 30 years of experience in architectural drainage, Stormtech is committed to providing the highest quality, expertly tailored drainage solutions for today’s building projects. The Australian, family-owned business works closely with regulators, legislators, end users, trades and distributors to develop problem-solving products.

Boasting an unrivalled depth of experience in linear drainage solutions, Stormtech welcomes questions on product selection, code compliance and fault-free installation. To ensure proper installation, Stormtech will gladly advise clients on appropriate waterproofing provisions for your linear drainage project.



REFERENCES

- ¹ Johnston, Nicole and Sacha Reid. "An Examination of Building Defects in Residential Multi-owned Properties." Griffith University. https://www.griffith.edu.au/__data/assets/pdf_file/0022/831217/Examining-Building-Defects-Research-Report-S-Reid-N-Johnston.pdf (accessed 28 June 2023).
- ² NSW Government. "Research report on serious defects in recently completed strata buildings across New South Wales." https://www.nsw.gov.au/sites/default/files/2021-10/Serious_defects_in_residential_apartments_research_report.pdf (accessed 28 June 2023).
- ³ Above n 1.
- ⁴ Ibid.